OCT 20 1919

This Issue Exceeds 73,000 Copies

THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 15 Cents

VOLUME 73, No. 16 | 535 North Dearborn Street, CHICAGO, ILL. | OCTOBER 18, 1919

CONTENTS AND DIGEST

The Artificial Feeding of Athreptic Infants. W. McKim Marriott, M.D., St. Louis 1173

Definition of the term "athrepsia." Pathogenesis of athrepsia. The injection of glucose. Use of lactic acid milk. The advantages of corn syrup. Method of preparation of lactic acid milk and corn syrup mixtures. Characteristic stools. Gain in weight.

Discussed by Drs. Talbot, Hess, Griffith, C. G. Kerley, J. H. Kerley, Helmholz, Hill, McCleave and Marriott.

Vaccinotherapy in Acute and Chronic Bacillary Dysentery. P. Nolf, Brussels, Belgium 1177

Futility of specific serotherapy. Vaccinotherapy in old chronic cases. The intravenous method in acute dysentery.

A Protest Against the Reckless Extraction of Teeth. Walter C. Alvarez, M.D., San Francisco.....1179

Abuse of tooth extraction as a cure for arthritis and other focal affections.

The Intra-Intestinal Tube Treatment of Hookworm Infection. John L. Kantor, M.D., Fort Oglethorpe, Ga..1181

Rationale of the "tube" treatment. Description of the tube technic. Systemic effects of oil of chenopodium.

Observations on the Work at Queen's Hospital in England. George Morris Dorrance, M.D., Philadelphia....1183

Account of the hospital and its methods. Special work in plastic surgery.

Oral and Plastic Surgery in the Intermediate Section of France: Observations of a Consultant. Herbert A. Potts, M.D., Chicago.....1184

Rate of formation of bone union. Technic for removal of foreign bodies. Nerve injuries.

The Broad Tapeworm, Dibothriocephalus Latus, in Minnesota: Additional Records. William A. Riley, Ph.D., Minneapolis 1186

Supposed rarity of broad tapeworm in this country. Its occurrence in foreigners chiefly. Report of two cases originating in Minnesota. Dibothriocephalus in dogs a possible source of the parasite.

1. Cysticercus of the Vitreous; 2. Congenital Multilocular Cysts in Relation with the Retina; 3. Anterior Lenticonus: A Clinical Communication. G. E. de Schweinitz, M.D., Philadelphia, and Meyer Wiener, M.D., St. Louis 1187

Cysticercus of the vitreous. Report of case. Types of tapeworm in the eye. Characteristics of cysticercus. Congenital multilocular cysts in relation with the retina. Anterior lenticonus. Rarity of anterior lenticonus.

Discussed by Drs. Verhoeff, Duane, Greenwood, Davis, Risby, de Schweinitz and Wiener.

The Action of Radium on Cataracts. Martin Cohen, M.D., and Isaac Levin, M.D., New York.....1193

The chemotherapy of cataracts. The starting point of cataract. Koster's method of radiotherapy. Methods employed by the authors. Material used for investigation. Report of cases.

Discussed by Drs. Levin, Greenwood, Jones, Weeks, Lewis, Risley, Savage, Green, Jackson, Ziegler and Cohen.

(Continued on next page)

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized on June 14, 1918.

Next Annual Session, New Orleans, La., April 26-30, 1920.

Copyright, 1919, by the American Medical Association.

SAUNDERS

Bulletin

PUBLISHING ACTIVITIES

Notwithstanding the many difficulties due to shortage of labor, equipment, and material we have published this year to date

36 NEW BOOKS
and
9 NEW EDITIONS

with other important works—both new and revised—well on toward completion.

Mock's

JUST OUT

Industrial Medicine and Surgery

Human health maintenance, conserving man-power, reclaiming and retraining the disabled from the war and from industry—that, in a word, is the purpose of Colonel Mock's book. It embraces such problems as prevention of occupational and other diseases, the practical application of the Safety First movement, plant and home sanitation, health supervision and insurance, first aid for the injured and diseased, plant dispensary work, methods for reclaiming and retraining the disabled of war and industry. The work is based on Colonel Mock's experience as chief surgeon to a large industrial institution and on his reconstruction work during the war. It makes a strong appeal to every physician and surgeon, particularly those interested in industrial health work and in the rehabilitation of the disabled. A timely subject is that on physical examination of applicants for work. The methods described by Colonel Mock are approved by the American Federation of Labor.

The book will serve as a text-book in courses in industrial medicine and surgery in medical schools; as a reference work for employers, labor leaders, social workers, and those engaged in the new economic and social health problems of today.

By Colonel Harry E. Mock, M.D., Assistant Professor of Industrial Medicine and Surgery, Rush Medical College, Chicago. Octavo of 846 pages, illustrated.

SAUNDERS, *Publishers* See Pages 3, 4, 5

CONTENTS AND DIGEST—Concluded

Early Function After War Wounds of the Extremities. George W. Hawley, M.D., New York 1201

Discussed by Drs. Plummer, Goldthwait, Sayre, Campbell, Orr, Byrne and Hawley.

Results in the Modern Treatment of Diabetes. Henry Rawle Geyelin, M.D., New York 1202

Discussed by Drs. Stengel, Rosenbloom, Roy, Mosenthal, Joslin, Kebler, Heyn, Grigsby and Geyelin.

The Influence of Desiccation on Human Normal Isohemagglutinins. Howard T. Karsner, M.D., and Herbert L. Koeckert, M.D., Cleveland 1207

A Newly Recognized Cause of Pulmonary Disease—Ascaris Lumbricoides. B. H. Ransom, Washington, D. C. 1210

Discussed by Drs. Zbinden, Albert, Bass and Ransom.

Desensitization of Persons Against Ivy Poison. Jay Frank Schamberg, M.D., Philadelphia 1213

THERAPEUTICS

Results in Therapeutics. Use and Abuse of Cathartics 1213

NEW AND NONOFFICIAL REMEDIES

Description of Articles Accepted by the Council on Pharmacy and Chemistry 1215

Hirathiol—Medicinal Foods—Soy Bean Gruel Flour.

EDITORIALS

The Lactose Content of Human Milk 1216

Excess of sugar in human milk over cow's milk.

The Factors Involved in Cyanosis 1216

The light thrown on the question by the recent researches of Lundsgaard.

Bacteria and Vitamins 1217

Application to the growth of plants and bacteria of the hypothesis concerning the rôle of vitamins in human nutrition.

"Collosols": An Uncritical English Endorsement 1218

Need in England of an impartial board similar to the Council on Pharmacy and Chemistry.

CURRENT COMMENT

Patenting Therapeutic Agents 1219

Patents in the interest of the public and the medical profession.

Variety of Diet in the Army 1219

The good effects on the troops of the great attention paid to their dietary requirements.

Quinin and Quitenin in Malaria 1220

The power of tissue extracts to destroy the alkaloid.

Ultraviolet Rays and Vitamins 1220

The inactivating effect of the rays.

MEDICAL NEWS 1220

GOVERNMENT SERVICES 1224

Medical Officers, U. S. Navy, Relieved from Active Duty.

Honorable Discharges, Medical Corps, U. S. Army.

FOREIGN CORRESPONDENCE 1228

Belgian Letter.

MARRIAGES 1229

DEATHS 1230

PROPAGANDA FOR REFORM 1231

The William A. Webster Co. and the Direct Pharmaceutical Co.

Anasarcin Advertising.

CORRESPONDENCE 1232

Need of Further Research on the Transmissibility of Measles and Varicella.

"Formulas for Use in Standardizing Autogenous Vaccines."

Reports on Local Anesthetics in Laryngology.

QUERIES AND MINOR NOTES 1233

The Determination of Lead in the Urine.

The Prescribing of Paregoric.

MEDICAL EDUCATION, REGISTRATION AND HOSPITAL SERVICE

Coming Examinations — Rhode Island July Examination — Arizona July Examination —North Dakota July Examination — South Dakota July Examination — West Virginia July Examination 1233

BOOK NOTICES 1234

SOCIAL MEDICINE, MEDICAL ECONOMICS AND MISCELLANY

The Physicians' Strike — Pathometry of the Influenza Epidemic 1235

MEDICOLEGAL

Not Liable for Malpractice of Substitute Physician — Sufficient Evidence That Child Was Born Alive 1236

SOCIETY PROCEEDINGS 1237

Coming Meetings.

Indiana State Medical Association.

American Association of Obstetricians and Gynecologists.

CURRENT MEDICAL LITERATURE

American Medical Journals

Caloric Requirements of Normal Infants and Children — Influenzal Croup — Nutritional Disorders and Intestinal Flora 1239

Therapeutic Meningeal Irritation in Neurosyphilis — Locomotor Disturbances in Disease of Cerebellum — Action of Certain Drugs on Brain Circulation in Man — Invalid Reaction — Energy Content of Extra Foods 1240

Medical Supervision of Framingham Schools—Study of Gastric Mucus in Diagnosis of Anorexia Nervosa — Antimeningococcal Action of Certain Dyes 1241

Destruction of Typhoid Bacilli in Rabbits — Experimental Streptococcic Tonsillitis — Effect of Feeding Yeast on Antibody Production — Biologic Classification of Streptococci — Positive Wassermann Reaction in Hyperthyroidism — Extracirculatory Factors in Angina Pectoris 1242

Oak Pollen Anaphylaxis — Neutrophilic Index in Diagnosis of Tuberculosis — Normal Human Serum Treatment of Pneumonia — Fate of Bone Graft 1243

Treatment of Hour-Glass Stomach — Metastatic Carcinoma of Spine — Radium Treatment of Uterine Cancer—Secondary Melano-Epithelioma of Bladder — Sacral Suspension of Uterus — Omental Grafts in Intestinal Surgery — Futility of Bridging Nerve Defects with Nerve Flaps — New Sign of Fecal Impaction 1244

Foreign Body in Urinary Bladder — Tracheotomy Without Loss of Blood — Etiology and Treatment of Cystocele — Sterilizing Catgut Sutures 1245

Foreign Medical Journals

Treatment of Liver Abscess—Primary Sarcoma of Liver—Primary Carcinoma of Ovary at Age of Eleven 1245

Wound Shock and Its Treatment—Resistance of Ascaris Eggs—Efficacy of Epinephrin in Treatment of Night Sweats—Experimental Investigation on Mixed Immunization—Influence of Sugar in Infection of Pathogenic Micro-Organisms — "Boomerang" Leg—Helminthic Ova in Human Stools—Removal of a Missile from Pericardium 1246

Influenza and Public Health Administration—Heart and Influenzal Pneumonia — Interstitial Pregnancy—Cesarean Section—Stillbirths in France—The Ocular Manifestations of Polymorphous Erythema — The Fourth Symptom with the Hutchinson Triad—Tuberculosis of the Skull 1247

Early Treatment of Acute Osteomyelitis—Measuring Expansion of Each Side of the Chest — Cultivation and Isolation of Anaerobes—Fibrous Transformation of Hygroma —Pulmonary Tuberculosis in Children—Psychomotor Instability in Schoolchildren—Ether Treatment of Whooping Cough—Influenza in the Pregnant—The Sea Sponge in Gynecologic Surgery 1248

Localization of Stereognosis — Biology and Psychiatry—The Plantar Reflex — Schizophrenia and the Choroid Plexus — Ulcerating Granuloma — Nervous Complications of Typhus—Mycosis in Rat—Acute Fatal Dilatation of the stomach 1249

Blastomycosis in America—Ligation of Hypogastric Artery—Law of Specific Energy—Transfusion of Blood—Tuberculosis in Children in S. Paulo—Serotherapy of Toxemia of Pregnancy—Perforation of Silent Gastric Ulcer—Exceptionally Severe Case of Paralysis Agitans 1250

The Functional Capacity of the Heart—Treatment of Early Inherited Syphilis—Painful Attacks from Sclerosis of the Pancreas—Chronic Abdominal Disease from Tardy Inherited Syphilis—Modern Treatment of the Insane—Endless Dilatation of Stenosis of Esophagus—Diathermy for Gonorrheal Orchi-Epididymitis—Exophthalmic Goiter in Colombia 1251

Tachycardia—Mitral Stenosis—Tonus of the Myocardium—Prognosis and Treatment of Diabetes—Parallel Between Intubation and Tracheotomy—Pathogenesis of Primary Hypertension—Ileus in the Pregnant and in Parturients 1252

TONICS AND SEDATIVES ..... Adv. Page 20

LABORATORY TESTS PLUS SKILL and PROMPTNESS

THE MEDICAL RESEARCH LABORATORIES, Inc.
Reliable Pathological, Bacteriological and Chemical Analyses
B. GRUSKIN, M.D., Dir., 800-42-44 Marshall Field Annex Bldg., 25 East Washington Street. CHICAGO
FEE LIST AND CONTAINERS ON REQUEST

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 73, No. 16 CHICAGO, ILLINOIS OCTOBER 18, 1919

THE ARTIFICIAL FEEDING OF ATHREPTIC INFANTS *

W. McKIM MARRIOTT, M.D.

ST. LOUIS

The term "athrepsia," as used in this paper, refers to that well known condition of extreme malnutrition of infants otherwise known as "marasmus," "infantile atrophy," or "dekomposition."

PATHOGENESIS OF ATHREPSIA

The essential factors in the pathogenesis of the condition, as determined by recent investigation, are discussed elsewhere,[1] and they need now only be referred to briefly. The condition of athrepsia may be considered as the end result of an insufficient intake or of a failure to utilize food in sufficient amount to supply the demands of the body; in other words, a condition of virtual starvation. In this condition the volume flow of the blood, that is to say, the amount of blood flowing through a given portion of the body per minute, is diminished. This diminished volume flow, it has been shown, is dependent, in part at least, on a decreased blood volume, seemingly the result of a decreased protein content of the plasma and consequent inability of the blood to maintain its water content. There is an atrophy of the blood as well as of the rest of the body.

PRINCIPLES OF TREATMENT

The obvious remedy for the condition is food, and very considerable amounts of food, for the energy requirement of such infants is high, and there is the need for replacing much lost tissue. Many of these infants will not begin to gain until they have received as much as 150 or 200 calories per kilogram of body weight, but unfortunately the tolerance for food is low. The intestinal tract and digestive glands supplied by an atrophied, poorly circulating blood are functionally weak. Digestion and absorption of food is necessarily poor. Unabsorbed food remaining in the intestinal tract of a weak infant is "gunpowder" which requires only the proper "match," bacterial or otherwise, to precipitate a catastrophe.

We are confronted then, with the problem of feeding a large amount of food to an infant whose intestinal tract may be incapable of caring for even small amounts of ordinary food.

THE INJECTION OF GLUCOSE

Food may, of course, be introduced parenterally, but this method of administration has definite limitations. Carbohydrate, in the form of glucose, is the only food that it is practicable to administer parenterally. Pure amino acids or fat emulsions are theoretically suitable for intravenous administration, but are not practical in the present circumstances. Intravenous injection of glucose is a valuable and temporary expedient when the need for food is imperative. The few extra calories introduced in this way occasionally seem to be sufficient to turn the tide in favor of the infant.

Something may be done toward increasing the tolerance of the infant for food. This tolerance, of course, rises as the nutrition and circulation improve, but it is possible to shorten to a great extent the period of repair. This is accomplished by increasing the blood volume and as a result, the volume flow. This may be done by blood transfusions or by the intravenous injection of a gum acacia saline mixture.[2] It is necessary to repeat the transfusions or injections at fairly frequent intervals. Whether or not these procedures are carried out, we still have before us the necessity for providing a food which contains the elements essential to nutrition and which can be fed in large amounts without causing gastro-intestinal disturbances. Breast milk, of course, meets the indication; but breast milk is not always available.

USE OF LACTIC ACID MILK

It has been a matter of common experience that infants suffering from gastro-intestinal disturbances are able to take larger amounts of milk artificially soured by lactic acid organisms than they can of sweet milk. We have come to regard buttermilk and protein milk as our chief reliance in the feeding of infants with gastro-intestinal disturbances. Buttermilk, that is to say, fat-free lactic acid milk, is low in caloric value; and although a useful food during a period of lowered tolerance, is not a food on which an athreptic infant will gain weight consistently. The caloric value may be increased by the addition of sugar and starch, and favorable results from the feeding of such a mixture have been reported. Protein milk is also a food invaluable for certain purposes, but of relatively low caloric value; and even when enriched by sugar addition it is not especially well adapted to the feeding of markedly athreptic infants, particularly those under 3 months of age, for any length of time.

* From the Department of Pediatrics, Washington University, and the St. Louis Children's Hospital.

* Read before the Section on Diseases of Children at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Marriott, W. McKim: Proc. Am. Ped. Soc., 1919.

2. The solution used is composed of gum acacia, 10 gm.; glucose, 5 gm., and physiologic sodium chlorid solution, enough to make 100 c.c. The solution should be centrifuged a short time before using, as a slight sediment tends to collect. From 10 to 20 c.c. of the solution per kilogram of body weight are injected very slowly into the sinus or into a surface vein.

In selecting a food for athreptic infants, we determined on a lactic acid milk as a basis. There would seem to be no very good reason *a priori* why the fat or, at any rate, all of the fat, should be removed from lactic acid milk. Surely the 2.5 per cent. of fat in protein milk is perfectly well tolerated. Buttermilk is ordinarily fed undiluted to even young infants with fairly good results, thus demonstrating that the concentration of sugar, protein and whey constituents contained in whole milk is not in itself harmful. A certain amount of fat can be tolerated by almost any infant, especially in a lactic acid milk mixture. On this assumption we have fed undiluted lactic acid milk containing amounts of fat up to the amount contained in whole milk, and have been convinced that the great majority of weak, athreptic infants tolerate extremely well undiluted whole lactic acid milk in fairly large amounts, one fifth of the body weight or more per day. For infants under 2 months of age we have usually fed the lactic acid milk somewhat diluted, but the evidence is not conclusive that such dilution is essential.

ADDITION OF CARBOHYDRATE

Having demonstrated to our satisfaction that whole lactic acid milk is well tolerated, we cautiously tried the addition of carbohydrate to the lactic acid milk in order further to increase the caloric value. The sugar selected for such a purpose must be one which does not readily undergo fermentation or which, if fermentable, will be so rapidly absorbed that but little fermentation can occur before absorption. The dextrins are not readily fermentable; they are easily split into maltose and glucose by intestinal enzymes but apparently not more rapidly than the end product can be absorbed; therefore little fermentable material is present in the intestinal tract at any one time.

Glucose itself is absorbed with astonishing rapidity, as has been demonstrated by intestinal loop experiments on animals. On the other hand, glucose is very readily fermentable, and for this reason has not been extensively used in infant feeding. Weill and Dufourt[3] have fed considerable amounts of glucose to infants in the attempt to render the stools acid, but in no case was it possible to do so, presumably because the glucose was absorbed before a great deal of fermentation had occurred. The products of the action of lactic acid organisms on glucose are quite innocuous. On theoretical grounds, it would seem that if glucose were fed in combination with lactic acid milk there would be a fair chance of its being absorbed before being attacked by intestinal organisms capable of producing harmful fermentation products. Experiments *in vitro* have shown that in such a mixture the common bacterial inhabitants of the intestinal tract are unable to flourish. In view of the considerations just mentioned, it would seem that a mixture of glucose and dextrin would be an ideal form of carbohydrate for our purpose. Maltose is usually present in ordinary mixtures of glucose and dextrin. In moderate amounts it is well tolerated by infants.

THE ADVANTAGES OF CORN SYRUP

Commercial "glucose," otherwise known as "corn syrup," is a mixture of dextrin, glucose and maltose. Of the total carbohydrate present, dextrin makes up approximately 55 per cent., the remainder being maltose, 30 per cent., and glucose, 15 per cent.[4] From its composition, such a mixture would seem to be well adapted for the purpose desired. An additional advantage of corn syrup is that it is cheap and is obtainable everywhere. We have added carbohydrate in the form of commercial corn syrup to the whole lactic acid milk fed to athreptic infants, and the results were as would have been anticipated. There was little or no tendency to diarrhea, even when as much as 10 per cent. of carbohydrate was added. The stools remained firm, formed and pasty, averaging from one to three a day. In the case of some infants there seemed to be almost no limit to the amount of carbohydrate that could be added to such a milk mixture. Thus we have added a sufficient amount of carbohydrate to cause a distinct glycosuria and have continued the feeding of such large amounts for long periods of time without there being the least tendency to diarrhea or vomiting, and this in the case of extremely weak and emaciated infants, previously suffering from prolonged diarrhea. Not only has it been possible to add this form of carbohydrate to whole lactic acid milk mixtures with impunity, but corn syrup in 5 per cent. solution may be given almost ad libitum between feedings as a means of supplying further calories.

METHOD OF PREPARATION OF LACTIC ACID MILK AND CORN SYRUP MIXTURES

Whole milk is sterilized by boiling, cooled to room temperature, inoculated with a culture of Bulgarian bacillus or other lactic acid producing organisms, and incubated over night. A properly prepared whole lactic acid milk is thick, creamy and homogeneous. Too long a period of incubation or too high a temperature results in the separation of curds and whey.

The corn syrup we have used has been an ordinary commercial variety. Such a syrup contains from 80 to 85 per cent. of carbohydrate by weight or, as its specific gravity is high (approximately 1.40), it contains from 110 to 120 per cent. of carbohydrate by volume. The thick syrup is somewhat difficult to handle and to mix with milk. It is more convenient to prepare a diluted syrup. Mixing 45 volumes of the thick syrup with 55 volumes of water gives a thin syrup containing approximately 50 per cent. of carbohydrate. One hundred c.c. of this by volume may be considered as containing 50 gm. of carbohydrate. Such a thin syrup is measured in a graduate and added to the whole lactic acid milk. The mixture should not be agitated sufficiently to separate the fat as butter. The mixture is not further sterilized, but is kept in a refrigerator until used. As such mixtures are very thick, a nipple with a large hole must be used in feeding.

THE FEEDING OF THE MIXTURES

In feeding formulas of the type described, it is advisable to begin with a mixture of equal parts of whole lactic acid milk and buttermilk (fat-free lactic acid milk) or, in the case of infants convalescing from diarrhea, on buttermilk alone. If such a mixture is well tolerated, the proportion of whole lactic acid milk in the mixture is increased until straight whole lactic acid milk is fed in most instances. The addition of the syrup is then begun, 3 per cent. of sugar being added at first; if no diarrhea occurs, the sugar percentage is gradually increased, depending on the infant's tolerance and on the amount of food necessary to cause a gain in weight. Fairly large amounts of the corn syrup can often be given to advantage.

3. Weill and Dufourt: La Nourrisson **2**: 65, 1914.
4. Wesener and Teller: J. Indust. and Engin. Chem. **7**: 1009, 1916.

The number of ounces of the milk mixture given at a feeding should be approximately the same as if breast milk were fed. We have used four-hour feeding intervals almost exclusively.

RESULTS OBTAINED

Up to the present time, we have fed the enriched whole lactic acid milk mixtures to forty infants varying in age from 1½ months to 18 months, the majority being between 2 and 5 months of age, at the time the feeding was begun. The period of time over which different infants received the formula varied from four days to eight weeks.

All of the infants were undernourished—the majority markedly so. About half of those observed had recently suffered from diarrhea. Four were syphilitic; fifteen suffered from other infections during the period they were on the formula. The infections included pyelitis, otitis media, pertussis and bronchopneumonia.

Little difficulty was experienced in making the infants take the food. Some older infants refused the food at first, but later took it eagerly. There were mechanical difficulties in feeding two infants with cleft palates. They did not at first seem able to swallow well the very thick mixture; later they took it without difficulty.

The amount of carbohydrate *added* to whole lactic acid milk varied up to 10 per cent. or over, the total sugar content up to as high as 15 per cent. The total added carbohydrate has been as high as 3 ounces a day. The amount of added carbohydrate has been greater in our more recent cases, as we have become convinced of its relative harmlessness. The result, as far as improvement of the nutritional conditions were concerned, have been distinctly better with the increased amount of added carbohydrate.

Vomiting, other than the spitting up of very small amounts immediately after a feeding, was unusual. In almost every instance it could be accounted for by the onset of an acute infection. Two infants with cleft palates vomited if the food was forced, and one infant with syphilis of the central nervous system vomited at intervals. This infant also had convulsions from time to time, and it seemed a reasonable assumption that the vomiting was of central origin.

THE CHARACTERISTIC STOOLS

The characteristic stools of the infants fed on the mixture described were light brown, formed, and pasty when mashed with the spatula. The number averaged from one to three a day. Several infants had stools looser than normal for a day or two at a time, but the stools again resumed their usual character without a change in food. Two infants with bronchopneumonia, one with pyelitis, and one very athreptic infant dying in collapse, developed a diarrhea during the last few hours of life. Aside from these four, only three infants developed a sufficient degree of diarrhea to warrant a change of formula, and all were returned to the same formula after a period and did well. Two of these had at a previous time suffered from diarrhea while on breast milk. None of the infants developed a condition at all suggestive of "intoxication."

THE GAIN IN WEIGHT

A gain in weight of the infants fed on whole lactic acid milk mixtures began when a sufficient caloric intake was reached, and generally continued steadily for days and weeks, interrupted only by acute infections. Some infants continued to gain even through febrile periods. The number of calories required before an infant would gain weight consistently was often high. Few infants whose weight was as low as 50 per cent. of the normal weight for the age gained on less than 160 calories per kilogram, and many required 200 calories or more. The gain in weight of these infants was not due to a process of "water logging." The gain continued over too long a period, and the flesh was firm and elastic. There was no tendency to edema, and none of the excessive flabbiness observed in condensed milk babies which one might expect in infants fed on a high carbohydrate intake. It might be well to draw attention to the fact that although the food here described contains a high percentage of carbohydrate, it is also high in protein and in fat, the relative proportions not being unlike those of ordinary milk mixtures. It is essentially a concentrated food, and therein lies its chief advantage. If an infant can take only a limited number of ounces at a feeding and only a limited number of feedings in the twenty-four hours and yet requires a large caloric intake, the only solution is to give him a food containing a large number of calories per ounce. The mixtures described have a fuel value of from 25 to 30 calories to the ounce, a larger amount than is contained in breast milk or in any of the usual milk formulas that could be fed with safety.

CONCLUSION

We wish to emphasize the fact that we do not consider the type of feeding here described as a panacea for infants. Whole lactic acid milk enriched with the carbohydrates of commercial corn syrup is simply a type of food that enables one to administer a considerable amount of nutriment in an easily assimilable form to infants needing a large amount of food but having an intolerant gastro-intestinal tract. Aside from this, there are no mysterious virtues in such a mixture.

ABSTRACT OF DISCUSSION

DR. FRITZ B. TALBOT, Boston: There is much in Dr. Marriott's paper which gives food for thought. One point he brought out, which I think bears repetition, is that children under weight require more calories per kilogram of body weight than the child of normal or average weight. That is borne out both in practice and in the basal metabolism. There is one point, however, which he neglected to state in his paper, and as he read it I thought of atrophic children I have seen, most of whom have subnormal temperatures. If such children are warmed up they frequently commence to gain weight, if they get enough calories. It must be remembered that if the amount of sugar is raised beyond a certain point it will not be absorbed and diarrhea will result. Of course, Dr. Marriott is dealing with another type of sugar than what is ordinarily used, and it is quite conceivable that the limit of absorption of this sugar is higher than that for those in ordinary use.

DR. ALFRED F. HESS, New York: About one year and one-half ago, I had an oportunity to feed some children on corn sugar. At that time, as you know, there was a great want of sugar in the community, and the Division of Chemistry in the Department of Agriculture, Washington, asked me whether I would see how corn sugar was digested by infants. I tried about twelve infants on the regular milk mixtures with the addition of 5 per cent. corn sugar instead of the ordinary cane sugar. These babies varied in age from about 2 months to 1 year. They were kept on this sugar for a period of about three months, and they all did exceedingly well. After the war was over and the shortage of sugar no

longer existed, we went back to cane sugar. I did not use the syrup, but just used the ordinary cane sugar. It is always cheaper than cane sugar and could be sold for a great deal less, but is always less than the cane sugar. Dr. Marriott has raised the question of whether this sugar is absorbed better. If it is absorbed to a greater extent it is of course of greater value. This can be determined readily by metabolism experiments.

Dr. J. P. Crozer Griffith, Philadelphia: I asked the chief resident physician of the Children's Hospital of Philadelphia several months ago what diet he would choose if he were obliged to select one kind of diet for these marantic babies. Without hesitation he answered, "buttermilk." By this I mean the usual buttermilk mixture with flour and sugar, which is now being used so much by physicians, and I hope will be used more and more because it is such a valuable preparation. I was very glad, indeed, to hear Dr. Marriott's paper corroborate my own experience with the lactic acid preparations of milk, and regarding the ability of the child to take a high percentage of carbohydrate. With the ordinary preparation of buttermilk, wheat flour and saccharose, referred to, the carbohydrate runs up to 10 or 11 per cent., or even more. I have had a decided fear of the high percentage of fat which Dr. Marriott has been using, believing that one of the values of the buttermilk food was the small amount of butter fat in it. However, experience must be the teacher in that matter, and Dr. Marriott's observation seems to show that the fat after all can be borne better than we supposed. It will be interesting to test this further. Dr. Marriott spoke about the food preparations containing lactic acid being more digestible. This has been my own experience. The fact that it is often difficult to have the parents prepare buttermilk properly at their homes makes me desirous, in hospital practice, of placing the infants on some other food as soon as possible. We have tried often to get away from the buttermilk mixture by making one of similar composition by using skimmed milk instead of buttermilk; but repeatedly we have found it was not tolerated as well. The only difference was that of the lactic acid content present.

Dr. C. G. Kerley, New York: Dr. Marriott's method of using lactic acid milk impressed me very favorably. I have used a great deal of lactic acid milk and protein milk but never after the fashion that the doctor has followed. I have usually employed the fat free lactic acid milk or one with a low percentage of fat in intestinal disorders, under which conditions it is extremely valuable. When the diarrhea subsides, other feeding is instituted. I have not been successful in using lactic acid milk as a general diet in young infants. I confess I would not have had the courage to use the milk in quite the strength that Dr. Marriott used it. I will be much interested in giving this scheme a trial. As regards the carbohydrates, it is quite necessary in feeding very delicate malnutrition infants to give a high percentage of carbohydrates. I usually prescribe the carbohydrate equal to 10 or 12 per cent., this being made up of the sugar that is in the milk, lactose or maltose and starch. Thin, emaciated infants, very much under weight, require from sixty to sixty-five calories to the pound. As regards the milk used in these cases, I prefer the evaporated unsweetened product. I find this much easier of assimilation than fresh cow's milk, regardless of the way in which it may be handled.

Dr. James Hoyt Kerley, New York: Dr. Marriott undoubtedly has had splendid results with his carbohydrate feedings in marasmic infants. It seems to me, however, that the trouble is often caused by the protein. The casein in cow's milk forms a hard curd, while in mother's milk it forms a flocculent curd. I have had great success with evaporated milk, in which the milk has been heated to a high degree, and the protein molecule was broken into many fine particles, which do not form the hard curds in the infant's stomach as is the case with cow's milk. An ounce of evaporated milk is equal to two and one-half ounces of cow's milk, so there is no difficulty in keeping up the caloric value. Dextrimaltose or lactose is added to the evaporated milk mixture in suitable proportions to obtain the requisite percentage of carbohydrates, just as is done with the lactic acid milk.

Dr. H. F. Helmholz, Chicago: I have been very much interested in Dr. Marriott's results, especially as we, too, have been interested in the sugar tolerance of atrophic infants. During the summer of 1915 we used this product in one of our stations in feeding about 125 babies with very good success. We used it as we would use a sugar and flour mixture. The difficulty of preparing the food with the syrup in the homes was such that we found it practically impossible to use it. If Dr. Marriott can show us how it can be used in the homes, it certainly would be a help in our infant welfare work, because it seems to me, from what he has said and from our experience, that it would be a cheap and very excellent food to use in infant welfare work.

Dr. Lewis Webb Hill, Boston: One of the most important things in infant feeding is a proper understanding of the use of the sugars. Often we feed altogether too little carbohydrate to our babies, being afraid of producing sugar fermentation. I was, therefore, greatly interested to hear Dr. Kerley say that he often uses from 10 to 12 per cent. in feeding his babies, as I do myself in many cases. Some years ago Dr. Talbot and I investigated sugar metabolism in a baby by gradually increasing the amount of sugar in the food, from 5 to 14 per cent., and keeping the other food constituents constant. We found that the feeding of high sugar increased the nitrogen and salt retention up to a certain point (14 per cent. sugar), when the baby developed a diarrhea. The way that high carbohydrate works beneficially is probably by sparing the protein, and by allowing the baby to store and retain more nitrogen and probably more salts than he would on a low carbohydrate diet. I am in the habit sometimes of feeding my babies on a rather low protein diet, just enough to cover the nitrogen needs, and supplying most of the fuel in the form of carbohydrate, usually as a mixture of dextrimaltose and lactose. Several years ago Dr. Dunn and Dr. Porter worked along these lines at the Infant's Hospital in Boston, and they found their babies could take from 10 to 12 and even 14 per cent. sugar in many cases without any harm, and with marked gain in weight. I believe that in constipated babies, especially those with small alkaline, rather foul stools, we need not be afraid of feeding high sugars. The baby must be watched carefully, of course, during the high sugar feeding, and if spitting up or diarrhea develops, the sugar must be reduced. The point is, however, that many babies do a great deal better on a high sugar diet (much higher than is ordinarily given) than on a low or a moderate amount of sugar, and we should not follow slavishly any set rule as to the maximum sugar that should be fed to babies.

Dr. Thomas C. McCleave, Oakland, Calif.: I was very much interested in Dr. Marriott's paper, because I have been pondering how we can give more carbohydrate to certain children. I would like to ask as to the intervals of feeding he has used in these children, and to put in the form of a suggestive question the possibility that perhaps the secret of his being able to give these children the large amount of fat that he is able to give them is dependent on the particular type of mixture he is giving them. It seems to be the whole success of his scheme. He has described his mixture of corn syrup, dextrin, maltose and dextrose. The whole explanation of the success of his scheme is dependent on the composition of his mixture.

Dr. W. McKim Marriott, St. Louis: The point raised is quite interesting in the light of some of the work we have been doing. I mentioned the fact that in the pathogenesis of this condition there is a greatly diminished volume of the flow of the blood sometimes down to as low as one-eighth of the normal. As the flow is increased by feeding, the subnormal temperatures rise and the infants begin to gain. In the preparation of these milk mixtures in the home we find the vacuum bottle convenient. The whole milk is boiled, cooled down to incubator temperature, inoculated and poured into the vacuum bottle and left over night. In the morning it is ready for use. As to the feeding intervals, we have used four hour intervals, six feedings in twenty-four hours; none more frequently than that. With those four hour feeding intervals we were able to give up to 280 calories per kilo-

gram, so it was not necessary to feed any more frequently. I draw attention to the fact also that these mixtures are quite elastic. One does not have to use the undiluted milk and add so much carbohydrate. The milk may be diluted, or the fat diminished. Of course, I realize that children of this type are likely to develop diarrhea and have to be watched. We made it a practice in the hospital to have the stools saved and to have the resident informed if there was a loose stool, so although we were feeding very high carbohydrate we felt that if we could stop it at the time one loose stool occurred no particular harm would be done.

VACCINOTHERAPY IN ACUTE AND CHRONIC BACILLARY DYSENTERY *

P. NOLF
Chief of the Division of Infectious Diseases, Belgian Army
BRUSSELS, BELGIUM

In a previous article we gave our observations of the epidemic of bacillary dysentery of the summer of 1917.[1]

In 1918, especially during August and September, the malady reappeared in the Belgian army with almost as many cases as in the preceding year. In a total of something over 500 cases about 20 per cent. were severe or very serious cases and 80 per cent. were light or moderately severe cases.

In the lighter forms we were able to add nothing to our previous observations either as regards symptomatology or bacteriology. For the grave types the bacteriology was likewise essentially the same. No more than in 1917 could the most malignant forms be attributed to the Shiga bacillus, and the marked predominance of the Flexner bacillus and *Bacillus Y* in 1917 was so much greater in 1918 that in no case were we able to isolate the Shiga bacillus, and in only three cases were we able to obtain agglutination of the Shiga germ. In all three of these there was also agglutination of the Flexner bacillus in high dilutions.

From the symptomatologic point of view, our 100 serious or very grave cases could be divided into two nearly equal halves, one half being choleraic. These are the cases in which the diarrhea is accompanied by vomiting, which not only increases the loss of fluid from the body, but also prevents its restoration by the ingestion of drinks. In a certain number the vomiting came on early, appearing very shortly after the first diarrheal evacuations.

CONDITION OF THE PATIENTS ON ADMISSION

The greater number of the sick were brought to us in an alarming state with weak, rapid pulse, a tendency to cyanosis, coldness of the extremities and more or less general muscular cramps. The treatment employed departed in nothing from that given in the aforementioned article.

The administration subcutaneously of from 1 to 2 liters of isotonic saline, together with a fluid diet, plays the chief rôle in the treatment. Frequently after twelve hours the appearance of these cases was much improved, and in a few days definite cure followed. The same rapid change for the better was observed in the cases of 1917, so that we are seriously tempted to affirm that in the choleraic form of bacillary dysentery improvement tends to be rapid, provided the dehydration is combated from the beginning. Perhaps we must attribute our good result to the fact that, on account of the fulminating character of the symptoms at the very outset, the patients of this class came under vigorous treatment at the earliest moment.

In the other half of the serious cases, there was no suddenness in the onset, no dehydration, no collapse; but the gastro-intestinal disturbances were more resistant. The stools were persistently liquid, mixed with mucus or abundant mucopus and blood. There may, indeed, be hemorrhage of dangerous magnitude. The fever does not abate in two or three days, but persists and may last for several weeks, assuming the remittent or intermittent type. Owing to the fever, the pain, the intestinal disturbances and the loss of blood, the patient becomes progressively weaker and more emaciated. It is the ulcerative form of bacillary dysentery. In the fatal cases the patients become veritable skeletons before death supervenes. In the less unfavorable cases, the general condition is not so seriously affected, but the intestinal disturbances persist, and the disease veers toward chronicity, with alternating periods of relatively satisfactory health and more or less numerous recrudescences. As indicated above, this ulcerative form only rarely follows the choleraic form.

FUTILITY OF SPECIFIC SEROTHERAPY

The treatment of ulcerative dysentery gave us only temporary results so long as we had recourse to the methods of the books. Specific serotherapy proved futile. Therefore, because of the inefficacy of these methods, we had, toward the end of the epidemic of 1917, employed vaccinotherapy in the chronic cases that remained. When possible to isolate a dysenteric germ from the intestine, we made and employed an autogenous vaccine; otherwise we used a vaccine of a Flexner bacillus type made from a gelose culture killed by heat. At this time the vaccine was administered subcutaneously, in progressively increasing doses, the initial dose being usually 10,000. To obtain the desired result it was necessary to raise the dose frequently to from 5 to 10 billion. These large amounts of sterilized culture are regularly well tolerated, though often during from twelve to twenty-four hours after the injection, one observes a little fever, headache and lassitude, with more frequent and less consistent stools, sometimes slight colic, and at the site of injection a little infiltration with moderate pain. All these sequelae soon pass away and, as a rule, disturb the patient but little. There are, however, exceptions to this rule. Thus, one patient, A. de M., bore every dose up to 5 million without reaction; but the next dose, being 10 million, resulted in a marked lighting up of the disease, with a moderate fever (maximum evening temperature 38.6 C.) which persisted for nine days, and the reappearance of the diarrhea (up to twelve liquid stools a day). After that he went on to recovery without further administration of vaccine. These first results have been given in our report of the epidemic of 1917.

VACCINOTHERAPY IN OLD CHRONIC CASES

In the winter of 1917-1918, we still were receiving cases of chronic dysentery of which the onset dated back several months or several years. We applied

---

* Read before the Section on Pharmacology and Therapeutics at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Nolf, Colard, Dulière and Roskam: L'épidémie de dysenterie bacillaire de 1917 au Front belge, Arch. méd. belges, May, 1918.

the same treatment, but with this difference, namely, that the initial dose was regularly a million germs, and that the dose was raised progressively up to from 5 to 10 billion. The results obtained continued to be favorable. In every case the general condition was improved, and the intestinal symptoms steadily decreased. In the majority, the cure was complete and definite. At times there seemed to be complete cure at the end of the treatment, but at a later period the symptoms returned. In some cases the stools, although regular and only one or two a day and without blood and mucus, yet remained soft, and there persisted a little intestinal instability and discomfort. Case 1 is an instance of this kind:

Case 1.—A. D., man, aged 32½, admitted, Jan. 29, 1918, for double parotitis, at the age of 26 had had enteritis for six months, with diarrhea and mucus and blood in the stools. Since then he had had frequent slight recurrences. On admission the stools were normal. February 8, all the local and general symptoms of parotitis had disappeared; yet though he was still in bed and on a diet of milk, rice, bread and two eggs, he was suddenly attacked with diarrhea. February 10, he had ten stools in twenty-four hours, with mucus and considerable blood. He became rapidly weak, and had anorexia and vomiting. The stools failed to show a dysentery bacillus, but the blood agglutinated Flexner's bacillus in a 1:200 dilution. February 16, the vaccine series was begun with 10,000 subcutaneously, and the intestinal hemorrhages soon ceased, traces of blood being found for the last time, March 4, after an injection of 300,000 given the day before. March 18, the patient had a soft stool, and the treatment was continued. During the months of April and May he received several doses of from 3 to 5 billion, and after a dose of 10 billion in June he seemed cured. In November he was seen again and reported himself well, but with a slight instability of the intestine.

We should probably have continued the subcutaneous method of administration of the vaccine, had we not, in other affections, particularly bacteriuria due to the colon bacillus or the staphylococcus, observed that the intravenous method of administration was more efficacious and more rapid in its effects. We therefore began the administration of the vaccine by the intravenous route in bacillary dysentery. Our first observation is that of Case 2:

Case 2.—P. S., man, aged 26, admitted, July 1, 1918, for a benign grippal pneumonia, had suffered in 1917 from acute enteritis, of which he was not completely cured, and was tender to pressure over the sigmoid colon. The serum agglutinated the Flexner bacillus in the dilution of 1:300, and the Shiga bacillus in the dilution of 1:50. Bacteriologic examination of the stools was negative, July 8, 12 and 20, but July 25 showed the Flexner bacillus. Since July 6, a series of subcutaneous treatments with Flexner vaccine had been carried on, and, August 4, an autogenous vaccine in a dose of 1 billion was employed. August 7, 14 and 17, doses of 10 billion were given. At this time there was a notable improvement in the patient and in the stool, which had frequently contained mucus and a little blood. But as the stools were not yet quite normal, a series of intravenous injections was begun, an initial dose of 1 million being given August 17, and the series terminating, August 25, with a dose of 10 million. The patient was completely cured, August 31.

The history of this patient furnishes elements for judgment of the efficacy of intravenous vaccinotherapy in dysentery. The subcutaneous doses of from 3 to 5 billion had given him no fever, but he had reacted to each of the 10 billion doses with an elevation of temperature to 37.6 C. The intravenous doses of 1, 3 and 6 million produced no fever. Fever appeared, however (37.6 and 37.8 C.), after each of two intravenous doses of 10 million.

From the point of view of its ability to provoke a febrile reaction, the dose when given by vein was equivalent to 1,000 times as much as administered subcutaneously. But the complete disappearance of the intestinal disturbances, which the subcutaneous doses of 10 billion had not given, was accomplished by the intravenous dose of 10 million. As recently reported by the patient, the cure has remained permanent. There were other patients who gave the same general results.

THE INTRAVENOUS METHOD IN ACUTE DYSENTERY

These successes induced us to try the intravenous method in a number of the cases of acute dysentery of the summer of 1918. We applied the treatment not only to those with confirmed ulcerative dysentery, but also to all those in whom the course of the disease made one fear the development of the ulcerative form, that is to say, in every case in which, after one week, a dietetic and drug treatment had not brought about a cure, or at least promise of a speedy cure.

The doses were given at four day intervals, the initial dose being regularly 10,000 germs, then 30,000, then 50,000, then 100,000, etc. In general, the betterment of the patient did not long delay. The fever dropped by lysis, with some recrudescences more or less marked on the days of the vaccine therapy and the next day; and the intestinal symptoms improved coincidently. In many cases of moderate intensity a complete cure was effected when the dose of 500,000 was reached. In the more refractory cases, it was necessary to push the vaccine up to about 10 million.

In fifty-two cases treated in this way, we had only two deaths. All the other patients left the hospital cured, except two whom military necesssity forced us to send away too soon. We have no doubt that in these two cases also the continuation of the treatment would have resulted in a cure in a relatively short time. By vaccinotherapy we were thus able to avoid the dangerous tendency toward chronicity which in 1917 was produced in a considerable number of our patients. This last result we considered particularly gratifying.

The complete record of the epidemic of bacillary dysentery of 1918 shows a complete cure, at the latest in a few weeks' time, in 500 cases, except only two patients who died, and two who left before the cure was completed.

Cases 3 and 4 are two further reports of acute dysentery treated by intravenous vaccines:

Case 3.—C. B., soldier, aged 27, admitted, Aug. 11, 1919, for an acute dysentery that began August 9, had much colic, and in twenty-four hours had twenty stools consisting of blood and mucus. There were no muscular cramps or vomiting. His serum agglutinated the Flexner bacillus at 1:200 and the Shiga bacillus at 1:200, but did not agglutinate *Bacillus Y*. The temperature ranged between 38 and 39 C. until August 22, in spite of a rigid medicodietetic treatment. By August 23 there were still eight liquid stools a day, always composed of blood and mucus. August 21, an intravenous dose of 30,000 germs was given. After August 26 the temperature remained normal, and on that day the patient had two formed stools, coated with a little mucus. The dose of vaccine was rapidly increased till it reached 10 million germs, September 14. From that date the stools had a perfectly normal appearance, and the patient left the hospital cured, September 19.

CASE 4.—C. M., soldier, aged 34, admitted, Aug. 22, 1918, was taken sick, August 19, with acute dysentery. He had sixty mucosanguinolent stools in twenty-four hours, and suffered from violent abdominal cramps. There were no muscle spasms and there was no vomiting. The serum agglutinated the Flexner bacillus 1:300 and the Shiga bacillus 1:50, but did not agglutinate *Bacillus Y*. The fever fluctuated between 38 and 39 C. until September 4, dropped slowly until it reached normal, September 13, and then the next day shot up and continued to rise until September 21, when it was 38.6 C. This secondary access of fever may be attributed to vaccination, which was begun, August 26, in a dosage of 30,000 and rapidly pushed to the higher amounts. September 15, the patient received 1 million germs; September 19, 3 million, and September 23, 5 million. After September 5 the stools were more fecal in type. From September 14 to 21, they numbered one or two a day and were formed. They continued thus until September 26, when the patient was discharged cured.

CONCLUSIONS

I believe I am justified in concluding from these observations that vaccinotherapy and more especially vaccination intravenously is the most effective therapeutic method in bacillary dysentery in its chronic forms and in the acute forms that show little tendency toward cure. It appears also that the method is more efficacious when it is applied early. The intravenous route has the advantage that it permits results from doses one-thousandth the size of the subcutaneous doses. Not having had occasion to try this method in cases of Shiga bacillus dysentery, it is impossible for me to speak of its utility in this form of dysentery.

In acute dysentery, intravenous vaccinotherapy cures quickly in cases exhibiting protracted fever and lasting diarrhea with hemorrhagic and slimy stools, these being the cases that are refractory to other therapeutic methods, including serotherapy.

A PROTEST AGAINST THE RECKLESS EXTRACTION OF TEETH *

WALTER C. ALVAREZ, M.D.
SAN FRANCISCO

Day after day I see people who have had half a dozen or more teeth extracted. Their former physicians had promised them great things; in some cases had even guaranteed a cure, but here they are still suffering and now greatly discouraged. Many have no chewing surface left, and the remaining teeth are often so distributed that the only thing to do is to remove them and put in plates. To my mind one of the saddest features is that, in many of these cases, an experienced physician might have foretold the unsatisfactory outcome and might have warned the orthopedist or the dentist to proceed cautiously and conservatively. The arthritis may plainly have been gouty or tuberculous, the headaches may have been due to nephritis or to advanced arteriosclerosis, and the pains in the shoulders may have been due to degenerative changes in the aortic arch. Sometimes I have secured the roentgenograms which were used in deciding which teeth were to come out and have been unable to find more than one or two roots which after years of experience I would call infected. In some, downward projections of the antrum had evidently been mistaken for abscesses. In others, it seemed to me that the physician, quite oblivious to any possible value of the teeth to their owner, must have ordered their extraction simply because he believed it a panacea for most diseases.

I believe we have lost our heads over this thing and that the time has come to call a halt. Men have obtained such beautiful results in some cases by extracting teeth that some of them are now trying to explain most diseases on the basis of these focal infections. In practice, they pull the teeth first, and if the patient returns unbenefited, they can then look to see what is the matter with him.

As the enthusiast often regards the conservative as a man who must be ignorant of the wonderful results which can be gained by using his methods, I wish to say that since 1911 it has been practically a routine procedure in my office to roentgenograph all suspicious teeth, and I have had hundreds extracted. I would emphasize the fact that I have seen my share of the miracles described by my radical friends—I, too, have seen inflamed joints go down over night; so-called tuberculous glands disappear as suddenly; headaches leave for good, and so on; but these things have not blinded me to the fact that for one miracle I have seen many failures and disappointments. My radical friends who, from their writings, would seem never to have had any failures may perhaps ascribe my unfortunate results to conservatism and to the choice of poor dental surgeons. Although this argument may apply in regard to those cases in which I ordered the extractions, it can hardly apply to those people who were "cured" by these same radicals but who, after a period of relief, are again going the rounds of doctors' offices.

We must recognize these failures; we must face them squarely and study them with particular care. Many people are not benefited by the extraction of teeth no matter how thoroughly it is done, and no good can come from further refinements of that technic. In the middle ages if a man died it was because he had not been bled enough, or because it had not been done from the right vein. Today we know that bleeding is useful in only a few conditions. Similarly, the day will come when focal infections will not be dragged in to explain all ills of the flesh. Seeing that there are these possibilities of failure, we must be more honest and conservative with those who put their lives in our hands. By all means let us continue to look for alveolar abscesses but, if we are to keep the respect and confidence of the public, if we are to avoid damage suits, we must be more careful what we promise some of our patients in return for a toothless mouth. Before deciding whether any or all of the suspicious teeth are to come out, the physician must look the patient over from head to foot. If he is young and sound, and if he has a dangerous arthritis, endocarditis or severe headache for which no other cause can be found, I believe we are justified in insisting on a thorough removal of the diseased tissues. When, however, the patient is old and failing; or when we find high blood pressure, arteriosclerosis and nephritis, let us be careful. Focal infections may perhaps contribute to the development of these chronic degenerative diseases, but I feel sure that they are not the only or even the principal cause. Certainly my experience has been that although the removal of the teeth will sometimes seem to give the patient a new lease of life, the arteries continue to harden, the pressure continues to rise, and sooner or later the symptoms return. Hence it is that

* Read before a joint meeting of the San Francisco County Medical and Dental Societies, May 5, 1919.

in these cases we should carefully consider all the factors involved. If the infected teeth are not serviceable, if they are loosened, perhaps hanging to wobbly bridges, or if their crowns are gone, there need be no question as to their removal. But if they are strong and serviceable, if the areas of rarefaction are small and questionable, and particularly if restoration by bridges will be impossible, let us be frank with the patient. Let us tell him that the proposed extraction is more or less of an experiment; that we will not promise him anything; but if his troubles are annoying him so much that he wants to leave no stone unturned in his treatment, he can try it.

It is one thing to order a dozen extractions when a man lies crippled with an acute or chronic arthritis, and another to order them because he feels nervous, has no energy, has indigestion, or has pimples on his chin. In the first place the patient is desperate, he is willing to take any chance to get well and will more readily forgive mistakes that arise through overzealous efforts than mistakes arising through lack of interest and neglect. In the second case, he is in no mood for big sacrifices; the treatment, even if successful, may cause more annoyance than the disease, and the physician may come in for a great deal of blame.

We must be careful, also, what we promise to those who, in addition to their root abscesses, have other sources of infection which cannot be so easily removed. I refer particularly to chronic bronchitis, sinusitis, prostatitis and urinary infections, all of which may persist in spite of expert treatment. We may perhaps have trouble, too, on account of pelvic inflammation and gallbladder disease.

The radical group of dentists tell us that most of our failures to cure are due to the fact that we have not removed all of the diseased tissue from the jaws. They would like to open up the jaw widely and dissect away the alveolar process until the tooth can almost drop out of itself. Naturally these men have a certain amount of right on their side. I, too, have seen a number of cases in which diseased bone or the abscess itself was left by the man who extracted the teeth. There are some people in whom the roentgen ray shows a widespread change in the bone around the diseased teeth, and in these cases I think it is probably advisable to remove enough of the inner or outer plate so that the operator can see what he is doing. I feel sure, however, that in the average case, a good extractor can remove the abscess, sometimes entire, hanging to the apex of the tooth.

Many of our patients will return still complaining of their old troubles even when the roentgen ray shows that the removal of diseased tissue has been complete. In some cases the bacteria which may originally have entered through the jaws seem to have obtained so firm a hold on the joints, the heart valves and other tissues that they will not leave simply because their old port of entry has been closed. In other cases, irreparable damage has been done and the joints cannot return to normal even after the disappearance of the infection. We must remember, moreover, that focal infection is probably not the only cause of arthritis, and our clinical study of this condition will not always begin and end with the search for pus.

I believe the *main* reason for our disappointments is that in many cases the alveolar abscesses seem to exercise no demonstrable influence on the patient's health. Time and again I have seen powerful, and healthy looking men with large alveolar abscesses which they had carried probably for most of their lives. They maintained that they had never had a headache or a twinge of rheumatism, that, in fact, they had never needed a physician. When such a man remains disabled after an injury we often try to rehabilitate him by removing the abscesses. Naturally, we often fail, simply because we take away something which has never had anything to do with the case. It may be, sometimes, that these sacs are as much outside the body as is a calcified tuberculous gland in the lung. When further bacteriologic work has been done we may find that some of them are sterile, the bacteria having died out just as they do in pus-tubes. Particularly in the case of the smaller areas, the necrosis may never have been infectious in origin but may have been produced by the chemicals used during the preparation of the root canals.

Many of the dentists have become so frightened over the terrible results which they think must follow every root infection that they are refusing to fill any root canals at all. They feel that the risk to life and health is so great that a man should immediately sacrifice every dead tooth in his head. Certainly the thousands of people who for the last thirty or forty years have been chewing contentedly on dead teeth (without signs of root infection) should be grateful that these radical ideas did not prevail when they were young. The trouble with many of our dentists today is that they do not know enough about the wonderful defenses of the body against bacteria. These defenses are particularly efficient in the mouth, where, in spite of the rich flora and the continual trauma, wounds heal with surprising rapidity. Bacteria are constantly getting through the first line of defense only to be stopped at the second, and I see no reason why the body cannot in many cases protect itself perfectly from the activities of a few invaders which have reached the apex of a tooth.

CONCLUSION

In view of the fact that the most thorough removal of focal infections often fails to cure arthritis and other diseases, let us be more honest and conservative with our patients. Let us be careful what we promise them. Let us save serviceable teeth whenever possible. Above all, let us do unto our patients only what we would have done unto ourselves if their teeth were in our heads.

177 Post Street.

Conservative Treatment.—Further, in your treatment I advise you to be conservative. Don't be "blown about by every wind of doctrine"; don't take up every new thing which is brought forward in the way of treatment. Private practice is not the sphere in which to try experiments; new methods should be tried in hospital, where they can be tried under exact conditions. Do not conclude that the new thing is, necessarily, the right thing. As Clough said,

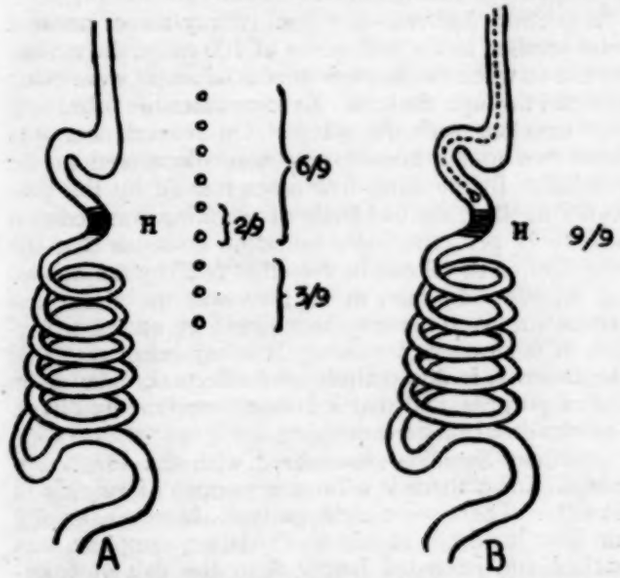
> "'Old things need not be therefore true,'
> O brother men, nor yet the new,
> Ah! Still awhile the old thought retain,
> And yet consider it again!"

The old treatment has stood the test of time, and has, probably, in most cases, justified itself up to a point. Be sure, therefore, that the new is going to be better than the old before you adopt it. There are some men who are forever rushing after new gods, after every fresh synthetic remedy or after vaccines, for example, which they apply to their patients with only a partial understanding of their action.—Robert Hutchison, Some General Principles of Therapeutics, *The Practitioner*, September, 1919, p. 164.

THE INTRA-INTESTINAL TUBE TREATMENT OF HOOKWORM INFECTION

JOHN L. KANTOR, PH.D., M.D. (NEW YORK)
First Lieutenant, M. C., U. S. Army; Gastro-Enterologist, U. S. Army General Hospital No. 14
FORT OGLETHORPE, GA.

Since we now know precisely the human habitat of the hookworm—namely, the first portion of the jejunum, with extension along the intestine in both directions in the severer infections—it follows that the parasites can be removed with the greatest dispatch by a method which would permit of the direct introduction into this region of a maximum concentrated dose of a drug chosen for this purpose. I believe that this can best be accomplished by means of the intra-intestinal tube treatment as devised and carried out by the gastro-intestinal service of this hospital during the past year. Up to the present writing (June, 1919), more than 250 of these treatments have been administered. The results, which seem to be



The shaded portions, *H, H*, represent the region occupied by the hookworms. *A* represents the digestive tract in a hypothetic "mouth" treatment with the drug given in three capsules, one every hour for three hours. The nine capsules are arbitrarily represented as dissolving opposite the levels indicated by their position to the right of the "tract." In case, for example, two of the capsules dissolved exactly opposite the infected area, four capsules above this point, and three below, the patient would receive the maximum benefit from two ninths of his dose, some benefit from six ninths of his dose, and none at all from the remaining three ninths. In the case of the "tube" treatment, *B*, the patient is represented as receiving the entire dose, nine ninths, with correspondingly increased efficiency.

superior to those obtained by methods heretofore commonly used, will be given in detail in a subsequent statement.

RATIONALE OF THE "TUBE" TREATMENT

Hookworm treatment, as generally practiced in the army, is based on the administration of a vermifuge (nowadays chiefly oil of chenopodium) by mouth, in capsules. It is obvious that just as soon as these capsules are swallowed, the physician loses control of his drug, so far as the significant factors determining its efficacy are concerned. That is, there is no way whereby he can cause the liberation of the full dose, or of any definite part of it for that matter, at the exact point where it will do the most good. Depending on the motility of the digestive tract of the patient (which varies widely in normal individuals) and on the solubility of the capsules selected to contain the oil, there is always the possibility that:

1. A considerable portion of the dose may be lost by the capsules dissolving *below* the site of the parasites; or,

2. The dose of oil may be too greatly diluted by secretions if the capsules dissolve *above* the site of infection.

On the other hand, it is equally clear that an ideal "tube" method would have the following theoretical advantages:

1. The drug would be delivered directly at the site of infection.

2. The full dose given the patient would be brought into action.

3. Instead of being given in fractions over a long period, the dose would be delivered *en masse*, its work accomplished quickly, its elimination pushed that much sooner, and the danger of cumulative toxic absorption correspondingly lessened.

In the accompanying illustrations an attempt is made to show graphically the differences between the two types of treatment.

DESCRIPTION OF THE TUBE TECHNIC

After several modifications the following procedure was adopted: The evening before treatment, the patient is given a light supper, chiefly rice and milk. There is no preliminary catharsis. The next morning, at about 7:30, the duodenal tube is swallowed on a fasting stomach and the patient is kept on his right side until the bucket has passed the pylorus.[1] The exact time at which the intestine is entered can be determined by the accompanying differential tests:

DIFFERENTIAL TESTS

Bucket in Stomach	Bucket in Duodenum
1. Aspiration through the tube withdraws a clear fluid, seldom bile-tinged, generally positive to Congo paper.	1. Aspiration withdraws golden-yellow, viscid bile, negative to Congo paper.
2. If a definite amount (say 15 c.c.) of water is injected, and the injection is followed by a syringeful of air to clear the tube, the greater part (more than two thirds of this water) can be withdrawn on the next aspiration.	2. The water injected flows on into the intestine and, but a small amount (less than one third if any), can be recovered by aspiration.
3. Injection of air is not followed at once by borborygmi.	3. Injection of air is followed at once (in some cases) by borborygmi.

As soon as Congo-negative bile is obtained, and water cannot be recovered as described above, the patient is ready to receive the drug. This is injected directly with the syringe (preferably of glass, and of about 30 c.c capacity) and is followed by a barrel or two of air to insure the expulsion of the entire dose from the tube. So far in our work, the drug (oil of chenopodium) has most commonly been given in a dosage of 3 c.c. It is quite possible that 2 c.c. may be sufficiently potent. Work on this point is in progress. Of course, it need hardly be mentioned that doses used in the army should receive appropriate modification, when necessary, for introduction into general medical practice.

1. With the buckets (Einhorn, Rehfuss) used on this service this usually took place within three hours. Unfortunately, until very recently, the writer was not familiar with the very convincing publications of Dr. Jutte. The tube used by this worker is said to pass the pylorus very quickly.

Following the injection, a period of six minutes is allowed for the diffusion of the oil throughout the worm-bearing area. At the expiration of this interval, 2 to 3 ounces of a warmed saturated solution of magnesium sulphate are given transduodenally. The object of this flush, which we regard as a very essential part of the treatment, is to remove the drug quickly from the very highly absorptive small intestine in order that undue toxic effects may be avoided. That this is actually accomplished is indicated by the observation that the majority of patients have a copious watery stool containing oil (and sometimes worms) within half an hour following this procedure. The regularity with which this sequence follows is one of the most striking features of the treatment.

It may be stated parenthetically that this flush method of control opens the way to the safe use of drugs in doses ordinarily considered dangerous. At different times, we have administered as much as 4 c.c. of oil of chenopodium, 12 grains of santonin, and 12 gm. of oleorosin aspidii without undue disturbance.

After the salts are given, the tube is removed and the treatment is complete. In most cases from three to five stools follow the first. If a sufficient number do not result, further catharsis may be administered by mouth. The patient is generally sick during the day of treatment, but by supper time (5 p. m.) he is ready for a light meal, and "feels as good as ever" the next morning.

PROTOCOL OF AN ILLUSTRATIVE CASE

9:05 a. m., Rehfuss tube swallowed.
10:33, oil of chenopodium, 3 c.c. per tube.
10:40, magnesium sulphate, 90 c.c., warmed, per tube.
10:42, tube removed.
11:20, first stool: oil, 68 worms.
12:00, second stool: oil, 56 worms.
2:25 p. m., third stool: oil, 40 worms.
3:45, fourth stool: oil, 19 worms.
4:40, fifth stool: oil, 12 worms.

SYSTEMIC EFFECTS OF OIL OF CHENOPODIUM: ANALYSIS OF SYMPTOMS

Owing to the precise method of administration offered by the tube technic and to the fact that the drug is readily absorbed by the duodenal mucous membrane and diffuses very rapidly throughout the entire body, we have been able to make some interesting observation on the systemic ("toxic") effects of oil of chenopodium. Moreover, since we had in our material some returned gassed soldiers, as well as several pneumonia convalescents, we had the opportunity of collecting some special data concerning the effect of the drug on the respiratory tract. From this experience we have gathered the impression that oil of chenopodium seems to exercise an appreciable selective action on certain systems of the body that have been sensitized by previous disease or injury. This peculiar susceptibility we have observed in the case of the respiratory system, as stated and in the auditory apparatus and in scar tissues resulting from wounds.

In the average case, the systemic action of oil of chenopodium is observed regularly within some twenty minutes after its administration by tube. The patient then begins to experience the well-known sensation of "tingling," "numbness," "burning," and "pins and needles," throughout the body, particularly in the palms and soles. At about the same time vertigo may be complained of and nausea as well, the latter often being precipitated by the removal of the tube. The period of discomfort seldom exceeds four or five hours.

The technic first used (which was subsequently modified) called for free preliminary catharsis, a waiting period of from ten to fifteen (instead of six) minutes after the injection of the oil, and a copious transduodenal flush of a liter (quart) or more of plain water (instead of the 2 to 3 ounces of salts finally recommended). Of the first 100 patients treated by this original method, fifty-eight showed no reaction except, in some cases, a moderate degree of tingling, vertigo and weakness. The remaining patients showed varying kinds and degrees of symptoms, but in no case have we so far found evidence of permanent damage. It was in our second series of 100 cases that the change in technic described above was instituted, forty-five patients being treated by the simplified method. A distinct improvement was observed, no less than sixty-five patients showing no ill results from the procedure. A correspondingly better showing is looked for in a series consisting entirely of cases treated by the simplified technic finally recommended.

Digestive System.—Of the twenty-seven patients who vomited in the first series of 100 cases, the majority did so when the last few ounces of water were being injected through the tube. In some cases the tube itself was expelled with the water. On several occasions from two to ten hookworms were discovered in the vomitus. In the forty-five cases treated by the preferred method, the incidence of vomiting was reduced to only 17 per cent. We found no evidence that the introduction of oil can be directly "felt" by the duodenal mucosa. In fact, at no time was the abdominal discomfort so frequently mentioned by others a feature in our own experience. It is my belief that this phenomenon is due entirely to ineffectual, delayed or violent purging, and that it is best overcome by direct, transduodenal saline catharsis.

Auditory System.—Associated with the very common dizziness there is a certain amount of ringing in the ears. There were eight patients, however, among our first hundred, in whom the latter symptom was marked and persisted longer than the day of treatment. By some individuals deafness also was complained of. In three of the eight cases a distinct history of previous injury or susceptibility was obtained. In the first patient, the tinnitus persisted in the side that had been affected by high explosives in France; in the second there had been a bilateral mastoid operation, and in the third there was a history of quinin neuritis of the auditory nerve lasting for one month six years previously. In the present series the longest duration of ear symptoms was nine days. Objective examination of the auditory apparatus was negative.

Respiratory Tract.—There were eight cases[2] in which violent, spasmodic, nonproductive coughing followed the injection of oil of chenopodium. All but one of these patients was the subject of an existing or recent disorder of the respiratory system. There were three patients convalescent from bronchopneumonia, two patients who had been severely gassed in France, and one patient who had chronic bronchitis. What is the cause of this phenomenon? That it is not the result of irritation from the tube itself is clear from the fact that whereas the apparatus is retained

2. These and subsequent figures refer to the incidence in our first series of 100 cases.

at times for hours, the cough does not commence until just about ten minutes after the oil injection. Similarly it is obvious that the effect is not due to direct irritation from inhalation of the vapor, because in that case it would follow instantaneously on the medication. On the other hand, the onset after ten minutes seems best explained by the theory that it takes just about this length of time for systemic absorption and the beginning of excretion of the drug through the expired air. As soon as this oil-laden air reaches the more sensitive parts of the respiratory tree (bronchi and trachea) in these susceptible individuals, the cough reflex is liberated and persists, presumably, until the oil excretion ceases or the irritation subsides. We have observed this paroxysm to continue as long as eight or ten hours.

The Skin.—Some degree of palmar tingling is the rule. Wounds with scar tissue show special susceptibility to a persistence of this symptom. Often the burning subsides in the sound member on the day of the treatment, but continues for another twenty-four hours on the injured side. There was one case of profuse sweating of the hands associated with the tingling.

Nervous System.—A mild euphoria with general excitation was observed in three cases. This resembles similar symptoms in alcoholic intoxication. In three other cases there was a lethargic state with toxic sleep and considerable prostration which lasted until the morning following the treatment. In this condition, hot coffee enemas were used with good results. The pulse remained uniformly of good quality. There was one case of nervous chill following the treatment.

Circulatory System.—Only one instance of circulatory collapse was encountered. This occurred in one of the first cases and followed the largest dose that we have given. Forty minutes after 5 c.c. of oil had been administered by tube, an increasing general reaction was followed by a sudden severe collapse with almost imperceptible pulse and cold perspiration. Active stimulation with the application of external heat brought about recovery in a couple of hours. For the next thirty-six hours there was retention of urine.

Urinary System.—One or two patients complained of increased frequency of urination and of pain in the back. Unfortunately our attempt to study the urine concentration, the phenolsulphonephthalein excretion, and the blood urea, proved abortive. Although we saw no evidence, so far as we went, of renal damage, we are not prepared to say whether this system escapes entirely.

SUMMARY

1. The intra-intestinal tube method is recommended as the method of choice for the cure of hookworm infection, on the grounds that it is more efficacious, safer and, once the duodenal bucket is in place, quicker, than the methods at present in vogue.

2. The procedure is simple and consists of the following essential steps: (*a*) introduction of duodenal tube; (*b*) injection of oil of chenopodium through the tube; (*c*) injection of saline flush to prevent toxic absorption of oil.

3. The specific toxic effects of drugs can be studied under the precise conditions of tube treatment. Oil of chenopodium seems to have a selective action on tissues sensitized by previous disease or injury.

OBSERVATIONS ON THE WORK AT QUEEN'S HOSPITAL IN ENGLAND*

GEORGE MORRIS DORRANCE, M.D.
PHILADELPHIA

The hospital at Sidcup, England, possessed the advantage of beautiful situation, being in the country just outside of London, away from all disturbing factors. Its organization had reached a rare degree of perfection when we arrived there, and the members of its personnel treated us with the utmost courtesy, going out of their way to see that every opportunity for study and observation was accorded us.

A unique plan was practiced in the arrangement of the different services. The division was so effected that there were sections under English, Canadian, Australian and New Zealand surgeons. This plan stimulated a healthy rivalry which assisted materially in the excellent results obtained.

The record system employed is worthy of mention. Every case was carefully studied and accurate records were kept of each patient. All symptoms, examinations and operative procedures, with photographs, were conscientiously recorded. By the method used by Captain Johnson, the roentgenologist at Sidcup, it was possible to take duplicate roentgenogram plates of any given area. This system was later adopted by the American Expeditionary Forces. No attempt was made to conceal or excuse failures. The records were open to all, and the surgeons were frank in discussing their mistakes.

The patients admitted to the hospital were those suffering from injuries at least three weeks old. At first many of them had been operated on previously at the front, but experience taught the surgical staff, and later I had the opportunity and privilege of agreeing with them, that no case should have more surgery at the front than that immediately necessary for the conservation of tissue, unless the patient could be kept permanently by the surgeon performing the primary operation. In the vast majority of cases, time and tissue were lost when the plastic operation was begun in the front line hospitals.

Fractures of the maxillae were for a time treated at this hospital, but subsequently, with the increasing amount of plastic work to be done, patients with these injuries were referred to the Croyden Jaw Hospital. Only those in the very severe cases, and those requiring plastic work in conjunction with their fractures were retained.

The rule followed in the treatment of fractures, except in the New Zealand section, was to remove all the diseased teeth and the teeth in the line of fracture. The British soldiers' teeth, on the whole, were in extremely poor condition, necessitating extraction very frequently, thus increasing the difficulties of the oral surgeon.

Fractures of the lower jaw, with loss of bone substance and teeth behind the first molars, were the most difficult to treat because of the tendency of the posterior fragment to ride upward and outward; to overcome this tendency, a saddle was placed on the intermaxillary splint to hold the fragment downward and inward in its proper position.

* Read before the Section on Stomatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

Major Pickrell devised an ingenious method to prevent the posterior fragment from riding upward and outward. He introduced a screw through the zygoma into the coronoid process, in this way retaining the fragment in its normal position. After union had occurred, the screw was removed.

Mr. Collier showed that in fractures of the lower jaw in the molar region, when bone substance was lost, he could avoid a graft by extracting the corresponding teeth of the upper jaw, thus letting the posterior fragment slide forward. His results were very good. One rule we all learned: To obtain union, all teeth in the line of fracture must be extracted.

PLASTIC SURGERY

In plastic work, this hospital holds an enviable position; the originality of the surgeons, coupled with their excellent technic, established principles in plastic surgery which will last forever. Major Waldron, of the Canadian section, was the first to use the Esser inlay, that is, the buried skin graft. This was later modified by Colonels Gilles and Newland, so that instead of introducing the graft from without, it was inserted from the inside of the mouth.

A later modification for obtaining mucous membrane for the mouth was the introduction of the free skin graft. The procedure consisted in incising the mucous membranes or scar tissue of the mouth and making a cast with modeling compound of the cavity thus produced. A Thiersch skin graft was placed over this cast of modeling compound, the latter being held by a dental appliance which had previously been cemented to the teeth. This method failed only in exceptional cases.

Colonel Gilles, the most experienced operator in the British section, frequently used a double tubed pedicle flap taken from the scalp or the chest. The advantage of the double pedicle flap is that it can be transplanted for a long distance without danger of the pedicle becoming infected. He insists that the flap, as in all plastic work, be taken from the area nearest the surface to be covered.

Cartilage grafts were preferred by all the surgeons to free bone grafts in the reconstruction of the nose and supra-orbital margin. It was found that the free bone grafts often became absorbed. No sutures were used through the cartilage to hold it in place.

Previous to our arrival, the staff had run through the entire gamut of methods of nasal construction and had adopted the Indian method as the one of choice, using in every instance a layer of skin for the inner lining. The septum was preferred for nasal support. In the event of its destruction, one or both of the turbinates were selected (if either or both were available), and a free cartilage graft was implanted high up on the forehead, in the area from which the flap was to be taken.

For the correction of shrunken eye sockets, Major Gilles implanted cartilage in preference to performing Mule's operation, in which gold or a glass ball is used, as the inlay became part of the tissues and did not act as a foreign body. The eyelids were restored by an epithelium inlay, with very good results.

Pedicle bone grafts, for example, those of the lower border of the jaw attached to the diagastric, gave better results than the free bone grafts. Free grafts taken from the rib and tibia periosteum, with a small amount of bone attached, and known as osteoperiosteal flaps, were used; all gave fairly uniform results. Practically all the surgeons used catgut for ligatures and for suturing the tissues, silkworm gut and horsehair being used to close the skin.

Artificial noses were not favored because of their appearance and discomfort, and the necessity of constantly changing and tinting them. Practically all the patients preferred the plastic operations.

The anesthetic used was ether or chloroform, or a mixture of both. In a large number of instances, the anesthetic was administered by rectum, ether being always used in these cases. Very little local anesthesia was used.

SUMMARY

In my experience at Sidcup the things most impressed on my mind were the system of records, the care with which the case was studied before operation, the originality of the operators, and the courtesy and patience shown to those of us who were fortunate enough to be assigned to Queen's Hospital for study.

2025 Walnut Street.

ORAL AND PLASTIC SURGERY IN THE INTERMEDIATE SECTION OF FRANCE

OBSERVATIONS OF A CONSULTANT *

HERBERT A. POTTS, M.D.
CHICAGO

The exigencies of war always distort and change the ideas and ideals of the civilian soldier, and he is at once confronted with problems that seem insurmountable. It was a difficult task for him to reconcile his dominant idea, of serving the wounded soldier to the best of his ability, to the existing military conditions which many times seemed to overshadow his professional duties; and he was often compelled to sit with folded hands awaiting the arrival of orders, equipment, supplies, etc.

Consolation must be had from the fact that in a very short space of time a movement was successfully "put over," the magnitude of which he will never fully realize, and from the consciousness that he was ready and willing to do his part in the "biggest thing that has ever happened."

For study and comparison a vast amount of work must be done to bring the various data into form which will permit the deduction of logical conclusions. I have ventured to classify some of the case records (the few of which I have copies) from which, together with my observations in the hospitals of Orleans, Blois, Tours, Chateaureaux and Issoudun, I shall endeavor to make some deductions.

RATE OF FORMATION OF BONE UNION

We will first consider the time elapsing between the date of injury and the patients' arrival at our base hospital:

Of thirty-five cases of fracture of the jaws of varying degrees of severity, twenty came into our hands within one week after injury. Our treatment of these comprised the removal of teeth, roots and foreign bodies from the line of fracture, the establishment of adequate drainage, and splint-

* Read before the Section on Stomatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

ing or immobilization. Seventeen of these cases were well along toward a bony union, demonstrated clinically and by the roentgen ray, at the end of twenty-seven days (average).

The three remaining cases of the twenty were very severe, with extensive loss of bone and much comminution of fragments, and with severe involvement of the soft parts. Satisfactory progress with bone formation was demonstrated in these at the end of 120, ninety and sixty days, respectively.

One case seen during the second week after injury was splinted and a bony union attained within four weeks.

One case seen in the third week had a bony union with trismus; there was no displacement and no loss of bone. Under an anesthetic, impressions were taken, splints constructed which were cemented in place, and by means of rubber bands, the jaws forced apart. At the end of seven days the patient could open his jaws to the fullest extent.

Of three cases seen in the fourth week, one was ununited, owing to roots of teeth and sequestrums in the line of fracture, after the removal of which the fracture healed rapidly under a splint.

Another, which had healed in malocclusion, was improved by an artificial denture.

The other case of this group was a fracture of the upper jaw which progressed rapidly after adequate drainage was established and after it was splinted.

Of four cases seen in the fifth week, one was united in malocclusion; this was refractured and splinted, after which it healed rapidly. The three other cases were injuries of the soft parts.

Three cases seen during the sixth week all healed rapidly after the removal of dead bone and drainage.

One case seen after ninety-three days healed rapidly after the removal of dead bone and splinting.

One case, seen 180 days after injury, being fractured at the symphysis, became solid after the wearing of a splint for four weeks.

One case seen 365 days after injury presented a suppurating sinus with a partial bony union; this closed rapidly with new bone formation after the removal of the second bicuspid, whose root extended into the line of fracture.

These few cases demonstrated the crying need of immediate reduction of fragments and restoration, as far as possible, of the dental occlusion, with the retention of fragments and with the teeth held in normal position by means of splints on the upper or lower jaws, or both, which might, if need be, be held in occlusion by a removable mechanical appliance.

Displaced fragments may be held in place by temporarily wiring them together, or by circumferential wiring, or in selected cases, by external pressure. The open-bite splint is at times of service.

I have seen very few cases of trismus following these injuries unless there were foreign bodies within the substance of the muscles of mastication. The mild cases due to neighboring inflammation readily subsided.

TECHNIC FOR REMOVAL OF FOREIGN BODIES

In this connection, I might mention the technic of the removal of foreign bodies as practiced at Base Hospital No. 202 by Capt. L. H. Graves and Roentgenologists Jones and O'Dea. I do not recall the name of the method, but it consists of a table beneath which is a movable roentgen-ray tube, the vertical ray of which is directed upward through the foreign body. The fluoroscope, also adjustable and at right angles to the vertical ray, is lowered on the part. The movement of the tube marks the excursion of the body on the fluoroscope. Blunt artery forceps are then placed on the skin at the supposed depth of the foreign body. The tube is again moved, and if the excursion of the tip of the forceps coincides with the excursion of the foreign body, it is exactly at that depth. The forceps are then held to mark the spot on the skin, the headlight of the operator is turned on, and a buttonhole incision is made in the skin. The forceps are introduced, and under the fluoroscope are carried by a boring motion to the body, which is grasped by the forceps and extracted directly under the eye. From one to five minutes is consumed by the whole operation, and there is no mutilation of the tissues. More than 400 foreign bodies were in this manner removed, with 100 per cent. success.

NERVE INJURIES

I have seen a few patients with injured hypoglossal nerves, but the injuries were either too near the condyloid foramen or too near the entrance of the nerve into the tongue to permit surgical procedure on them. The same may be said regarding the seventh nerve, as it was usually severed within the petrous portion of the temporal bone, or too near its foramen of exit, or too near its exit from the parotid gland, so that it was not promising from a surgical standpoint.

After noting the difficulty which a patient with a severed hypoglossal nerve experiences in eating and talking, I should hesitate very much before utilizing the hypoglossal to repair the facial nerve.

The sliding of the jaw to one side on opening the mouth, after injuries to the neck of the ramus, seems to be due to impaired external pterygoid function, which may be the result of muscular or external pterygoid nerve injury, and usually improves or is recovered from entirely. We see the same phenomenon at times to a mild degree following nerve blocking of the second and third branches of the trigeminus.

Injury of the third branch of the trigeminus in a fracture of the jaw is the rule rather than the exception and is negligible.

CHARACTER AND EXTENT OF INJURIES

It seems from subsequent observation of cases that even when there is extensive destruction of soft tissues, one should not delay in the reduction and fixation of the remaining bony fragments in the best possible position. This applies also to the periosteum which molds the bony new growth rather than forms it.

It seems also that anything more than a very feeble effort at primary repair of the soft parts is likely to be a failure, and that the wide open wounds after having been freed of all foreign bodies and injured tissue do better than the ones in which an effort at repair has been made.

Under constant and efficient care for a few days or weeks, secondary closure with a view of limiting scar formation may be attempted; but before attempting extensive plastic surgery, one should wait until all infection has disappeared and until the bacteria and their spores which have been incarcerated within the scar tissue have been killed.

At the earliest possible moment after injury all foreign bodies, including detached bone fragments and tissues injured by the missiles, should be cleanly dissected out, as the lacerated soft tissues do not retain their vitality and subsequently become culture mediums for bacteria.

Wide open wounds, even when extensive suppuration was present, due to lack of frequent dressing, cleared up more quickly than even partially closed ones. Careful Carrel-Dakin management, especially if the wounds did not communicate with the oral cavity, was the method of choice.

Reduction of fractures, immobilization and retention of fragments, together with adequate drainage, established with the idea of its continuance much longer than in wounds of other parts of the body, were the aims of the maxillofacial staffs within the intermediate section, and a suppurating sinus which continued more than six weeks from the time of injury was an indication for operation and removal of the usual sequestrum, after which the suppuration quickly subsided, cavities in the bone and overhanging ledges of bone being removed.

The retention of bone-forming elements in normal position, especially the periosteum with its attached osteoblasts, even in the presence of suppuration, is very important. I suspect that many cases with extensive loss of bone substance which were splinted for transit overseas, and which seemed to be cases requiring large bone-grafts, were found to have bony union by the time the patients landed, or at least had so far regenerated that very small grafts were required.

When the general order came to evacuate all cases, our aim was to splint them in the best possible occlusion, using splints which could in an emergency be quickly released, allowing the patient to open his mouth, or avoid accident by using an open-bite splint.

The general order stopping all operations except in cases of emergency prevented our doing many plastic operations which we were at that time ready to execute.

The feeding of these patients at times presented difficulties, but usually the friendly cooperation of head nurses, cooks and the Red Cross, enabled us to procure an abundance of proper food for them. A variety both in kind and preparation was also provided.

Some few patients came to us with their jaws wired together, and most of them were in good shape. It was no doubt the best means at hand, but dangerous.

I am inclined to think that the better practice would have been to expedite the transportation of the patient to the base hospital without any attempt at reduction or immobilization as the presence of any sort of appliance is at times misleading to the surgeon. He thinks that as an appliance or wire is about the teeth, the patient has been properly attended to, and may be inclined to procrastinate in sending him to the oral surgeon who, when the patient does come, finds that there has been union either fibrous or bony, in malposition, and that reduction on account of the delay is more difficult, demanding at times a refracture before proper splinting can be done.

A TRIBUTE

I must pay tribute to the wonderful spirit, implicit trust and confidence of the American soldier; his placid mental state and fortitude were marvelous.

There were eight tables in our operating room at Orleans and when the trains of wounded arrived eight patients were put on the tables, eight rested on the floor, and as fast as one was taken from an operating table another was placed on it. This routine was kept up until the last one was operated on and dressed. There was never a whimper or complaint from any of them. They even assisted when being placed on the table, and took the anesthetic in the most quiet way imaginable without a word of remonstrance or sign of fear, really a phenomenon almost never seen in a civilian hospital. In the wards also there were no grouches, and they appreciated to the fullest extent the efforts of officers and nurses in their behalf. My hat is off to the doughboy.

THE BROAD TAPEWORM, DIBOTHRIOCEPHALUS LATUS, IN MINNESOTA

ADDITIONAL RECORDS *

WILLIAM A. RILEY, PH.D.
Chief, Division of Economic Zoology, Department of Agriculture, University of Minnesota
MINNEAPOLIS

Cases of infestation of man by the broad, or fish tapeworm, *Dibothriocephalus latus*, have been regarded as rare in the United States. Nevertheless, Stiles[1] states that over thirty cases have been recognized here, chiefly among foreigners. At least four cases have been reported since that time, and I have knowledge of seven cases from Minnesota which have not been recorded.

Indeed, I am inclined to believe that there are sections of Minnesota in which it is by all odds the commonest of the large tapeworms of man. This seems true in some of the sections settled largely by Scandinavian, Finnish and Polish immigrants. Cases have been reported repeatedly as occurring among these nationalities, but have been regarded as imported. Such, indeed, most of them clearly are.

In 1906, Dr. W. S. Nickerson[2] reported three cases that had occurred in the practice of Dr. Owen W. Parker of Ely, Minn. The patients in two of these cases were Finlanders, but the most significant fact was that the third was a child of Finnish parentage, who was born in Minnesota and had never been outside the state. The father came to this country in 1891. Three years after coming from Finland he passed a tapeworm (*Dibothriocephalus?*). The infested child was born, April 15, 1902, in Ely, Minn. At the age of 2 years, he ceased to thrive or gain in weight, became anemic and suffered from abdominal pains. In August, 1904, his mother noticed segments of tapeworm in his stools and called the physician, who successfully treated him. Up to the time of this report, the child had remained perfectly well.

The tapeworm expelled measured 7 feet in length and was a "typical specimen of *Dibothriocephalus latus*." The scolex measured 1.75 mm. by 0.9 mm.

In the words of Dr. Nickerson, "This latter case is of exceeding importance, since there can be no question that the infection occurred in Minnesota, and it, therefore, demonstrates the fact that the broad tapeworm now has a foothold, at least locally, in this country."

So far as I have been able to learn, Dr. Parker's case is the only recorded one of *Dibothriocephalus* infestation of man in this country which is not clearly explicable on the theory that the parasite was an importation. Indeed, in spite of the apparently clear-cut nature of the evidence, the general point of view of medical men is that expressed by Kopelowitz,[3] who says:

> There is very little evidence at present to justify an assumption that native foci of infection exist in this country.

For this reason it seems desirable to place on record two additional cases which have come to my attention

* Published with the approval of the Director as Paper No. 174, of the Journal Series of the Minnesota Agricultural Experiment Station.

1. Stiles, C. W.: In Osler's Modern Medicine, Ed. 2, Vol. II, Philadelphia, Lea & Febiger, 1917.
2. Nickerson, W. S.: The Broad Tapeworm in Minnesota, J. A. M. A. **46**: 711 (March 10) 1906.
3. Kopelowitz, J. C.: Bothriocephalus Latus Infection in Missouri, with Report of a Case, J. Missouri M. A. **13**: 502 (Oct.) 1916.

in the course of some studies on the subject. In both of these, the available data are very meager, but the essential fact bearing on the question is clear: In neither case was there any doubt that the condition originated in Minnesota.

CASE 1.—A Minneapolis boy, aged 8 years, had been suffering from gastric trouble. On treatment, a specimen of *Dibothriocephalus*, 7 meters long, including the head, was expelled. It is preserved in the collection of the Department of Pathology of the University of Minnesota, under the number 0-17-404, but with only the significant note that the patient was born and had lived for all his life in Minnesota.

CASE 2.—A young Chippewa Indian child, on the White Earth Indian Reservation in Mahnomen County, Minn., is the second case which has come to my attention and which is even more significant than the first. Here again many data which would be of value could not be obtained, but this much is known: The child had never been away from the reservation, but was infested by a *Dibothriocephalus*. On treatment more than 3 meters of proglottids were recovered. Unfortunately the head was not obtained, or at least was not preserved. The narrowest neck segments present measured 1.5 mm. in breadth. The eggs of the worm agree very well in measurement with those of the typical *Dibothriocephalus latus*, measuring from 65 to 70 microns by 50 to 55 microns.

Such information as is available regarding the first of these cases I owe to Dr. M. Barron of the Department of Pathology of the University of Minnesota, who treated the patient. That regarding the second case was obtained through the courtesy of Mr. P. A. Starr, teacher in the Indian School at Naytahwausch, who aided me in confirming reports and who put the specimen at my disposal. To each of these I wish to acknowledge my obligation.

An unfortunate misstatement of Nickerson's conclusions has gained wide currency, evidently due to errors in the reports by Singer[4] (who cites "Nichorson"), and of Kopelowitz,[5] 1916, who says:

> Nichorson has frequently found the larvae of *Bothriocephalus latus* in fish caught in the Great Lakes.

In reality, Nickerson was very careful to avoid making this statement. He does state that:

> Larvae of *Dibothriocephalus* do occur in American fishes. I have obtained them from fish caught in the Great Lakes; but without feeding experiments to rear the adult worm from the larvae, it is impossible to determine the species of *Dibothriocephalus* and the *probability is in favor of such larvae being of some species other than latus—the parasite of man* (italics mine).

Recently, Hall and Wigdor,[5] have described a bothriocephalid tapeworm from a dog at Detroit. Four specimens were collected. As they differ from *Dibothriocephalus latus* and from related species which have previously been reported from the dog, the writers regard the species as new, and propose for it the name of *Diphyllobothrium* (*Dibothriocephalus*) *americanum*.

Dr. W. L. Chandler, of the Michigan Agricultural College, has also collected a worm of this genus from a dog at East Lansing, Mich. The worm when found was not in condition for study, but careful measurements of eggs have shown that they average considerably smaller than those of *D. latus*, being about 62 by 37 microns, as compared with about 70 by 45 microns for the latter species. Unfortunately, none of the strobilae of *D. americanum* had eggs present, and it is therefore impossible to state whether Chandler's specimen should be regarded as of this species.

Hall and Wigdor call attention to the fact that the bothriocephalid larvae, or plerocercoids, found by Nickerson in fish from the Great Lakes may have been the larvae of their dog tapeworm. "The idea is of interest, as bothriocephalids parasitic in man are commonly capable of parasitizing dogs, and vice versa. It may be, herefore, that fish caught in the Great Lakes and consumed here in Detroit, and elsewhere, are parasitized by a plerocerocoid other than that of *D. latus* but possibly capable, nevertheless, of parasitizing man."

I have received a number of complaints of "wormy bass" and other fish in the lakes of northern Minnesota, and in several instances, physicians have stated that the parasites were tapeworms transmissible to man. This conclusion obviously was based on a knowledge of the life history of *Dibothriocephalus latus*, or of Nickerson's report. On investigation, it was found that the supposed tapeworms were larval trematodes encysted in the flesh of the fish. In the case of several small-mouthed black bass, taken from Bass Lake, Mahnomen County, in early September, there were in the viscera numerous proteocephalid tapeworm larvae which have been identified by Dr. George R. La Rue, as those of *Proteocephalus ambloplitis* (Leidy).

However, the possibility that there may occur in this region bothriocephalid larvae other than those of *D. latus*, but equally capable of developing in the human host, is strong. Their development in the dog is suggestive, but the question as to their relation to man can be settled only by direct experimentation as opportunity offers.

4. Singer, J. J.: A Case of Bothriocephalus Latus Infection, J. A. M. A. **66**: 1618-1619 (May 20) 1916.
5. Hall, M. C., and Wigdor, M.: A Bothriocephalid Tapeworm from the Dog in North America with Notes on Cestode Parasites of Dogs, J. A. Veter. M. A. **6**: 355-362, 1918.

---

1. CYSTICERCUS OF THE VITREOUS
2. CONGENITAL MULTILOCULAR CYSTS IN RELATION WITH THE RETINA
3. ANTERIOR LENTICONUS

A CLINICAL COMMUNICATION *

G. E. DE SCHWEINITZ, M.D.
Colonel, Medical Section, O. R. C., U. S. Army
PHILADELPHIA
AND
MEYER WIENER, M.D.
ST. LOUIS

The clinical observations on which this communication is based were made in the Ophthalmic Service of United States Army General Hospital No. 14, Fort Oglethorpe, Ga.

CYSTICERCUS OF THE VITREOUS

CASE 1.—*History.*—An unmarried woman, aged 19, born in Ireland, who had been a resident of the United States for thirty-four months, and whose family and personal medical history, so far as it was possible to obtain it, was unimportant, had always been a healthy girl, and with the exception of measles at the age of 14, had had no illness. Ten months prior to the examination she had noted blurred vision of the left eye. This gradually increased and was associated with the appearance of white, cloudy masses floating in front of the eye. At the expiration of five months they ceased to be apparent, and she was no longer able to distinguish even bright light.

* Read before the Section on Ophthalmology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

Ocular Examination (July 14, 1918).—Vision of the right eye was 20/20; of the left eye, nil. The palpebral fissures were equal in width, the muscle rotations normal. The right pupil responded promptly to light and in accommodation, the media were clear, the disk slightly reddened in outline, and there was a slight pulsation of the inferior retinal vein. A single cilioretinal artery was noted on the temporal side. The general vascular system was normal and the refraction slightly hyperopic.

The pupil of the left eye dilated readily, and there were no gross changes in the iris; but in the lower portion of Descemet's membrane were a number of punctate deposits and two or three small dots on the anterior capsule of the lens, indicating previous points of adhesion between it and the margin of the iris. The vitreous was moderately cloudy, and there were a few fixed vitreous opacities in the anterior portion of this body. From the upper and inner quadrant a gray reflex was visible, indicating a choroidal infiltration, or perhaps a retinal detachment. Owing to the cloudiness of the vitreous directly in advance of this area, it was not possible to discern accurately, or focus on, any retinal vessel. The region of the disk was visible through the hazy vitreous, and its position could be differentiated by its color; but no vessels were distinguishable.

Quite anterior in the central field of the vitreous, and well in advance of the retina of the macular region, there was a large globular mass, light gray, with a slightly darkened center. The outline was regular and its border almost transparent. It was translucent toward the center, and it was from 6 to 7 disk diameters in width. From its lower border there protruded a tubular extension transversely wrinkled, which terminated beyond a slightly constricted neck into a head, on which two bright dots, and the position of the hooklets, could be distinguished. Distinct peristaltic movements of the cyst were visible and the movements of the protruded head, neck and body were often very active. At times the head was withdrawn within the sac, very much as might be the case with the head and neck of a diminutive turtle.

During a number of observations on the days following the discovery of the cysticercus, the conditions did not materially change, except that in various movements the observations could be improved. Thus, sometimes the head was situated directly downward, sometimes downward and forward, and sometimes more to the temporal side. Depending evidently on differences in the density of the vitreous opacities, the walls of the cyst, particularly those on the temporal side, were more clearly demonstrable. In short, the movements of the parasite, to use the language of Saltzmann, presented an everchanging and interesting spectacle. Naturally, the diagnosis of cysticercus of the vitreous was readily made.

General and Laboratory Examinations.—The patient was a well-nourished, rather pale girl, who in a few months prior to her examination had lost weight, and quite recently her appetite had been impaired and she had suffered somewhat from nausea. But the general examinations of the heart, lungs and abdominal viscera were negative, with the exception that one roentgenogram indicated a slight thickening in the region of the gallbladder. On repetition, however, of this examination, the roentgenologist was unprepared to say that this appearance was of pathologic significance. The urine showed no pathologic content; the blood count was, red blood corpuscles, 3,450,000; white blood cells, 5,000; the Wassermann test of the blood was negative. An examination of the stools revealed the presence of ova, but no segments of the worm. It was supposed that these ova were those of *Taenia saginata*, but, as is well known, the eggs of this tapeworm and those of *Taenia solium* so closely resemble each other that they cannot be distinguished microscopically, and the ophthalmoscopic appearance of the hooklets leave no doubt that the ocular intruder was *Cysticercus cellulosae* (Fig. 1).

Operation.—After keeping the patient under observation for two weeks, during which there was a manifest increase in the vitreous density and descemetitis, it was determined to operate, after the patient had been fully informed as to the chances of operative success and failure, and also fully informed that if the parasite was not removed the eye was doomed to a destructive inflammation. The following operation was performed by Dr. Wiener:

An incision was made in the conjunctiva with scissors between the external and inferior rectus muscle, beyond the ciliary body and parallel with the corneal margin. Next, the sclera was incised longitudinally with a Graefe knife, the incision being 1 cm. in length, passing through the sclera, choroid and retina. At once fluid vitreous exuded. Guided by means of an electric ophthalmoscope, forceps were introduced into the opening and the cyst grasped and its removal attempted. This, however, was impossible owing to the fact that it promptly ruptured, and further efforts were not made. The wound was closed with conjunctival sutures and a dry dressing applied.

For three days there was no reaction, when pain developed in the eye, lasting for about an hour. A small point of adhesion to the iris and the lens in the upper and outer quadrant was discovered, but there was no ciliary injection. The lens, however, was quite milky in appearance. Convalescence proceeded uneventfully, and four days after operation the patient was discharged, the eye being free from irritation but the lens cataractous.

Twenty-eight days after operation, the eye suddenly became very painful, the conjunctiva was intensely congested, and there was marked ciliary injection, the iris being dull, dark, and slightly greenish in hue. The patient was advised to permit the enucleation of the eye, to which operation she consented. Following this operation there were no complications, and at the expiration of a proper period an artificial eye was adjusted, and it was noted that the patient's general condition began very rapidly to improve.

Dec. 11, 1918, or practically six weeks after the enucleation of the eye, the patient reported that a hemorrhage had occurred from the socket. She was immediately examined, and a clot of blood found at the apex of the orbit. This hemorrhage was coincident with a menstrual molimen. About 1 ounce of blood was lost, but no further hemorrhage occurred. She gave the history that on one previous occasion menstruation had been associated with epistaxis. Since this date there has been no report of any complication.

According to H. B. Ward,[1] three different species of tapeworm larvae are known to occur in the eye and its adnexa, namely, those of *Taenia solium, Taenia echinococcus* and the bothriocephalid tapeworms. Of these, *Cysticercus cellulosae* is the most common.

Referring to the frequency of ocular, and especially of retinal and vitreous involvement, Vosgien's figures,[2] quoted by Ward, may be reproduced. Among 807 observations tabulated by Vosgien as recorded for a definite location, 372 were concerned with the eye, and of these, 120 of the retina and 112 of the vitreous. None the less, in individual experiences the cysticercus is not common. For example, in the often quoted figures of von Graefe, there were ninety cases in a total of 80,000 patients with eye diseases.

Extra-ocular cysticercus is of comparatively slight importance. The intra-ocular situation of the parasite may be in the anterior chamber, in the posterior chamber, even in the lens, but naturally, a cysticercus in the posterior segment of the eye, that is, under the retina and in the vitreous, is the one that presents the greatest clinical interest.

As Ward points out, the large number of cases in which this parasite has been found in the retina is noteworthy; moreover, such as are recorded as free in the vitreous body are in the majority of instances seen there after they have escaped from beneath the retina into the vitreous. Indeed, observers have main-

1. Ward, H. B.: Ocular Parasites, American Encyclopedia of Ophthalmology, **12**: 9265, 1918.
2. Vosgien: Le cysticercus cellulosae chez l'homme et les animaux, Paris, 1911.

tained that the parasite always makes its first appearance behind the retina, the cysticercus having gained entrance into the vessels of the choroid, and from them has passed beneath the retina, which it detaches from the choroid. Von Graefe, however, was of the opinion that the parasite was able to develop floating in the vitreous, and Fuchs, as will be recalled, states that the cysticercus may find its way into a vessel of the retina or the ciliary body, from which position it may enter the vitreous directly without a preceding detachment of the retina.

The natural history, etiology and distribution of the tapeworm need not be discussed, as they have been dealt with fully in many articles. Among those easily accessible are the one by Saltzmann,[3] and in quite recent times the one by H. B. Ward,[1] already referred to.

Naturally, the lodgment of a *Cysticercus cellulosae*, which is the larval stage of *Taenia solium*, or pork tapeworm of man, can exist only where *Taenia solium* is found. At one time this was most frequent in northern Germany, but even here, owing to the improvement in meat inspection, etc., there has been a noticeable diminution of this form of tapeworm infection. So far as we are aware, *Taenia solium* has not been found in native Americans, but only in those who have emigrated to this country, and even so, it is very rare among them.

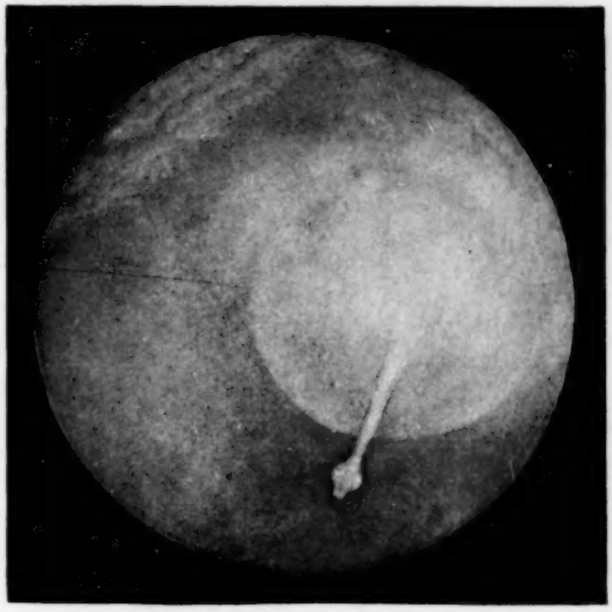


Fig. 1.—Cysticercus of the vitreous.

In general terms, the fertilized eggs of the adult tapeworm are distributed with the feces of the primary host. By some chance, for example, drinking contaminated water, eating vegetables which have been grown in land that has been fertilized with fresh manure, or dwelling in close community with persons who are suffering from tapeworm and whose habits are uncleanly, the infection is communicated, and the eggs reach the stomach of the new host, where they are hatched, and the embryo, reaching the intestinal canal, gains access to the surrounding tissues, where it may remain or be picked up by the lymph or blood circulation and sent to a distant portion of the body.

As has already been pointed out, the passage into the eye is most frequently through the vessels of the uveal tract, but the parasite may also reach the vitreous through a retinal vessel. After the embryo reaches its final destination, it develops into a bladder worm, which, if it is simple, is called a cysticercus, *Cysticercus cellulosae* being the bladder worm, or the larval stage of *Taenia solium*.

It is stated that it usually requires at least two months before the suckers and hooklets of the adult form are visible.

It is rare that an intestinal tapeworm and an ocular cysticercus are coincident, but such coincidence has been reported. It is also most unusual that more than one cysticercus shall be present in the eye; however, two in one eye have been reported by Alfred Graefe, and Schöbl observed three cysticerci in the same eye. In our patient, upward and inward there was what appeared to be a detachment of the retina. It is possible that this indicated the location of a subretinal cysticercus. Most unfortunately, the enucleated eyeball was mislaid or lost by some one in the personnel of the laboratory. Otherwise this point could have been decided, as well as a report of the pathologic histology of the globe included.

When Ward wrote his article on ocular parasites (it was published in 1918) four cases of cysticerci of the eye had been reported in the United States. Two of these presented only iris involvement, and two occupied the retinal-vitreous position.[4] It is possible that the cysticercus in our patient had been subretinal and escaped into the vitreous; but certainly when under observation it was entirely free in the vitreous and well in advance of the central area of the retina.

Operative experience has taught that a subretinal cysticercus is most easily secured; next, one that is fixed in the vitreous; but the chances of success when the bladder worm is free in the vitreous are exceedingly slim. The last named condition was the case in our patient, who none the less was advised to submit to operative procedure, because in the absence of it the eye is practically sure to go on to a progressive iridocyclitis with destruction of the eyeball. Occasionally, however, cysticerci may live in the eye from two to four years, and a few cases are on record in which the residence of the parasite within the globe occupied a much longer period of time.

CONGENITAL MULTILOCULAR CYSTS IN RELATION WITH THE RETINA

CASE 2.—A man from the Dental Corps, aged 22, was referred to the ophthalmic service because of defective vision of the left eye. There was no history of injury and no evidence of constitutional disease. This defective vision had existed from childhood, and at the time of examination vision equaled light perception. The media were clear, the disk was pale and sharply outlined, and to its outer side there was a small crescent of choroidal disturbance. The arteries were small and straight, the veins normal in size, color and outline. In the macular region a large, white, atrophic spot, slightly greater in diameter than the disk area, was visible. Protruding from the upper half of this area there was a large cyst formation, in shape somewhat resembling an observation balloon. Its summit was best studied with + 4.50 D. On the surface were a number of small vessels. It was transparent

3. Saltzmann: The Entozoa of the Human Eye, System of Diseases of the Eye, edited by Norris and Oliver 4: 843, 1900.

4. Turnbull: Cincinnati M. News 9: 373, 1880. Miner: M. Rec., Dec. 26, 1884.

and it covered about three fourths of the atrophic macular area.

Extending from the lower temporal edge of this cyst for a distance of about 3 disk diameters there was a narrow, transparent tube carrying two atrophic vessels. This tube resembled in appearance and size a manifest canal of Cloquet. The canal terminated in a wide-spreading cyst mass, which was less transparent than the one in the macular area, and fully four times as large. It possessed the shape of a rounded cone, with the base gradually losing itself in the peripheral part of the temporal quadrant of the retina. On its superior surface there were numerous small cysts, or vesicles, and some which were confluent. The surface of the mass was covered with vessels, which were for the most part atrophic. In the lower quadrant of the field the retina was elevated 2 diopters.

The entire middle and lower field of the fundus was occupied by retinal pigment deposits, unassociated with any atrophic spots, with the exception of one to the nasal side of the inferior temporal artery, just below the disk, and two less pronounced ones still farther below. The vision of the right eye was 20/20, and the eyeground was entirely normal (Fig. 2).

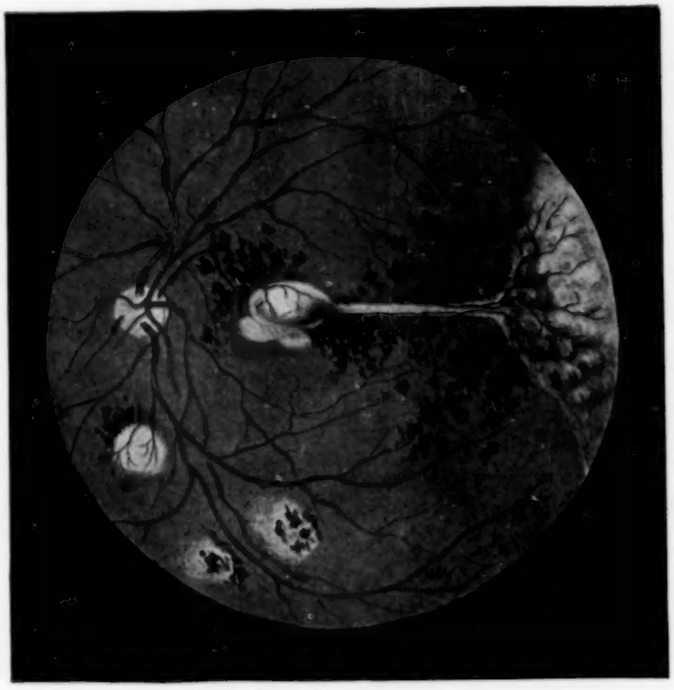


Fig. 2.—Congenital multilocular cysts in relation with the retina, and associated with quiescent pigmentary retino-choroiditis.

The lesions portrayed in the accompanying water color are subject to several explanations, none of which is entirely satisfactory. That edema and degeneration may result in cysts or cystic spaces in the retina is well known, and such conditions have often been found in the examination of enucleated eyeballs, the so-called Iwanoff cysts back of the ora serrata being good examples. That retinal cysts form in association with separation of the retina of long standing is also well known, and it has been suggested by Leber that some of the cases of detachment of the retina clinically recorded were really instances of cystic degeneration. Derby,[5] in reporting a probable cyst of the retina and noting that clinical observations in this regard are rare, refers to Gunn's case of congenital microphthalmos and cyst of the retina, to Collins' observation of a retinal cyst which was shown to have developed between the outer and inner nuclear layers, and to Thompson's description of a cystic detachment of the retina. One of us (de Schweinitz[6]) has recorded a cyst of the retina in association with detachment of the retina. It is interesting that in Derby's, Thompson's and de Schweinitz's cases the cysts partly overhung the disk. Incidentally, our case does not belong in this category.

Among the many anomalies of, and associated with, persistent hyaloid artery,[7] various types of cysts, small and large, have been reported. Rarely, the origin of this vessel, instead of being the usual one, is from a point more or less distant from the optic disk. For instance, in Schöbl's[8] case it arose 1½ disk diameters down and in from the papilla as a translucent cone with a broad base, which suggests a cystic process, and proceeded from the apex in two strands, one of which ended in the posterior surface of the lens.

In Silcock's[9] case the source was from a macular coloboma, and the strand reached the posterior part of the lens.

Is it possible that the balloon-like cyst in our case, from which a cord carrying two vessels passed to the temporal portion of the retina, terminating in the large multilocular cystic area, may be an eccentric vestigial hyaloid vessel with a bulbous expansion at its origin, bent over and twisted away from an approach to the posterior surface of the lens, to be fastened as is portrayed in the illustration? Choroiditis, such as we observed, probably congenital, has been reported in a number of examples of persistent hyaloid artery and its anomalies. We frankly think this theory of the appearances in our patient's eye has little if anything to commend it, but it is mentioned because of the numerous anomalies that have been reported in connection with the remnants of a hyaloid vessel and its sheath.

Doubtless the whole process is best explained by assuming that in intra-uterine life there developed some type of hemorrhagic retinochoroiditis, and that cystic changes occurred in the secondary exudative processes. There seems no doubt that the balloon-shaped mass is a cyst, and the large area in the temporal periphery of the retina almost certainly represents a mass of exudation which elevates the retina (it may have started in the choroid) and in this elevated retina multilocular cysts have developed. What the nature of the underlying mass is we do not pretend to state, although in this connection it may be worth while to refer to a case observed and reported by de Schweinitz and Shumway[10] which ophthalmoscopically suggested a new growth, a glioma, indeed, but on examination proved to be a detachment of the retina, with extensive dropsical cystic degeneration of the rod and cone visual cells. It may be that the large area in the temporal part of the retina should be classified as an example, in limited space, of exudative retinitis, as described especially by Coats, with cystlike changes on its surface.

5. Derby: Tr. Am. Ophth. Soc. **12**: 827, 1909, 1911.
6. De Schweinitz, G. E.: Diseases of the Eye, Ed. 8. This case was also reported in the Ophthalmic Section of the College of Physicians, Philadelphia, but the report was not published.
7. De Beck: Persistent Remains of the Fetal Hyaloid Artery, Press of Robert Clarke & Co., Cincinnati, 1890.
8. Schöbl: System of Diseases of the Eye, edited by Norris and Oliver, **3**: 422, 1898, Plate IV.
9. Silcock: Tr. Ophth. Soc. U. K. **20**: 188, 1900.
10. De Schweinitz and Shumway: Dropsical Degeneration of the Rod and Cone Visual Cells of the Retina which Clinically Simulated Glioma, Am. J. M. Sc., December, 1901.

ANTERIOR LENTICONUS

CASE 3.—A recruit, aged 20, was referred by the camp infirmary for examination because of defective vision which had existed from infancy. It was possible to see him only once. Vision, right eye was 8/200; left eye, 10/200. It was not possible in the brief time at the disposal of the examiners to ascertain whether any spheric or cylindric combination could improve vision. Each lens presented a pronounced anterior cone, which could readily be seen by ordinary daylight, looking through the anterior chamber, especially from the side, and also when the pupils were dilated. During this dilatation it was noted that the lenses were small and slightly hazy, except in the region of the zonula. Fundus examination by the indirect method detected no abnormality. The tip of each cone almost touched the posterior layer of cornea (Fig. 3).

So far as we are aware, only two cases of anterior lenticonus have been reported, one by Webster,[11] in which the conicity resembled that of a conical cornea. Without atropin, the following lenses raised the vision, which was 15/200, to 20/200, namely,

O. D. $-\frac{1}{11\frac{1}{2}}$

O. S. $-\frac{1}{2} \bigcirc -1/10$ c. axis 135

After atropin, the vision of each eye was 20/40, the right eye accepting a + 1/10 and the left eye a + 1/10 ⌒ + 1/24 c. axis 135.

The second case is the one recorded by Van der Laan[12] under the name anterior polar crystalconus; the patient, a man aged 23, the anomaly being said to have developed slowly during eight years. There was a conical protuberance of the lens into the anterior chamber, occasioning through its center a high grade myopia, while through the periphery of the lens the refraction was hyperopic. The cone is said not to have differed in any way from the ordinary lens substance.

Neither of these reporters, in the abstracts which we have been able to consult, undertakes to give any explanation of this lenticular anomaly. As is well known, examinations of posterior lenticonus have usually demonstrated a rupture of the posterior capsule, and certainly displacement backward of the nucleus is a constant feature. Both of these observations of anterior lenticonus antedate the discovery of posterior lenticonus, first made in a human being by F. Meyer in 1888. Referring to this fact, Louis Dor[13] suggests that there may have been an error in observation, the reporters having been deceived by reflections, whereby they mistook a posterior conicity for an anterior lenticonus. Dr. Wiener, who examined the patient whose brief clinical history has just been reported, is confident that the conicity was an anterior one, as stated, so pronounced that it projected almost to the posterior surface of the cornea.

1705 Walnut Street—Carleton Building.

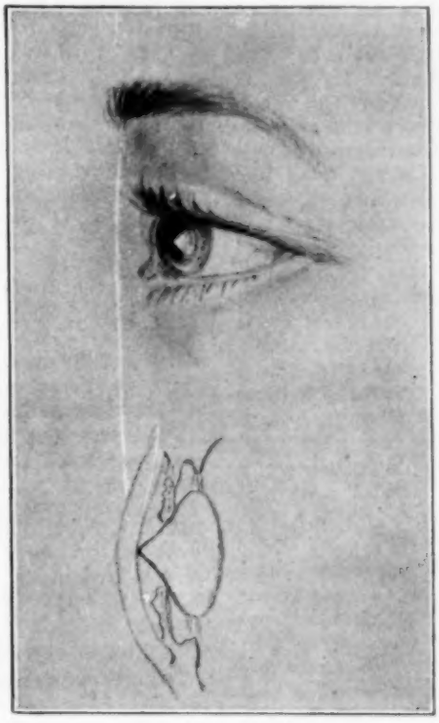


Fig. 3.—Anterior lenticonus.

11. Webster: Arch. f. Augenh. **4**: 262.
12. Van der Laan: Jahresb. f. Ophth. **11**: 369, 1880.
13. Dor, Louis, in Encyclopedie française d'ophtalmologique **7**: 23, 1908.

ABSTRACT OF DISCUSSION

DR. F. H. VERHOEFF, Boston: I have seen only one certain case of intra-ocular cysticercus. Since my opportunity for seeing rare cases has been unusually great, the condition must be extremely rare, at least in the vicinity of Boston. This case was shown to me by Dr. Greenwood. The cyst was remarkably similar in size and situation to that described by the essayists. Microscopically, I have examined two cases. A specimen from one of these, a case of preretinal cysticercus, was sent to me several years ago by Professor Fuchs. The other case occurred in the practice of Dr Marlow who removed the eye and submitted it to me for examination. This cyst was entirely subretinal, and occurring in a child, led Dr. Marlow naturally enough to make the diagnosis of glioma retinae. In each of these cases the cyst was ruptured and a marked chronic inflammatory reaction of essentially the same character had been set up. There was complete separation of the retina with formation of cyclitic membranes and formation of cicatricial tissue on the inner surface of the retina. Surrounding the cysts the infiltrates and exudates consisted chiefly of plasma cells, eosinophils, and endothelial phagocytes. Pus cells were notably scanty. In Fuchs' case there was a layer of fused endothelial leukocytes lining the external wall of the cyst. In my case the choroid was markedly infiltrated with plasma cells and eosinophils, but in Fuchs' case it was almost free from infiltration, due no doubt to the fact that the cyst was preretinal. From these cases I should judge that it is the content of the cysts that causes the inflammatory reaction, and this fact no doubt explains the reaction which followed the operative interference in the essayists' case. In regard to the case of retinal cysts reported by the essayists, I may say that I have never seen a similar case. In fact, so far as I can recall, the only case of retinal cysts that I have seen clinically was that reported by Dr. Derby and referred to by the essayists. I have frequently found retinal cysts, however, in eyes that have been removed for chronic inflammatory conditions associated with separation of the retina. These cysts seem always to be due to splitting of the retina in the layer of Henley, that is, to separation of the neuro-epithelium of the retina from the nervous portion, and are thus in a way, analogous to vesicles of the cornea or skin. I found them once in a case of glaucoma secondary to contusion of the eye. This case was so unusual that I am passing around a section from it. The essayists offer several possible explanations for the cysts in their case, but state that none is satisfactory. The explanation, however, that they consider the least satisfactory appeals to me the most strongly; namely, that the cysts have resulted from a partial persistence of the hyaloid system associated with an abnormal development of embryonic tissue. Their suggestion that the case is in any way related to retinitis with massive exudation seems to me improbable.

As to the case of anterior lenticonus: I recall seeing a similar case about fifteen year ago, but I am unable to find the record of it. The essayists wisely refrain from attempting an explanation of this condition about which so little is known, but in a discussion such caution does not seem to be considered necessary, so that I venture to suggest two possibilities, first, that the condition is due to persistence of the conical shape of the embryonic lens vesicle, or second, that it is due to delayed separation of the lens from the cornea.

Dr. Alexander Duane, New York: Apart from the very rare cases of extreme anterior lenticonus, such as the authors have described, we occasionally see cases in which the condition exists to a moderate degree, not incompatible with fair sight. I can recall two such cases of moderate, progressive anterior lenticonus, both observed in women between 20 and 30 years of age. In both there was well marked, somewhat irregular corneal astigmatism with the rule and a total astigmatism against the rule, the latter increasing in the one case from 2.50 D to 6 D in nine years, and in the other from 4 D to 7 D in over three years. In both the ophthalmoscope showed the characteristic, small central area of metamorphopsia, shifting with movements of the eye more rapidly than the corneal reflex. In both fairly good and serviceable vision was secured by cylindric glasses. In both also the condition was more marked in the right eye. Somewhat analogous to the congenital cyst noted by the authors was the peculiar condition I have elsewhere described, in which there was an egg shaped pigment bordered coloboma of the choroid, to one margin of which was attached by threads resembling the byssus of a mussel a slender and elongated, very delicate and transparent, apparently tubular bag, which, running straight up in the vitreous, lay parallel to the retina and about 1 mm. in front of it. At its upper end this structure tapered off into a point, to which was attached a hook-like appendage. This peculiar body differed entirely in appearance, situation, and direction from a persistent hyaloid artery, nor was it in any way like a retinitis proliferans. It remained unchanged all the time the patient was under observation (eight years). The only other fundus change was a faint, striate atrophy in the region of the macula, causing a central scotoma, which reduced the vision of 17/100. It is, perhaps, a fact of some interest that this patient was rejected for life insurance, because the examining physician had taken his coloboma ot the choroid for an albuminuric retinitis. Perhaps also cystic was the condition which I have reported as occurring in a child, whose eyes, otherwise normal in appearance, showed shrunken, rudimentary optic discs, practically complete absence of the retinal vessels, and at each macula a sharp-cut round ring, which I took to be the base of a translucent protrusion of the retina, although I could not actually demonstrate this, since there were no vessels or markings, on which the presence of retinal structure over the area circumscribed by the ring could be predicated.

Dr. Allen Greenwood, Boston: Dr. Verhoeff has asked me to discuss briefly the case he mentions, a case which was observed early, due to the fact that the cyst was between the macula and the disk, and when first seen appeared to be the size of a grain of rice, and about that shape. It was nearly round when I saw it. It projected only one or two diopters, and two or three days later it was down below the level of the macula, and later it crept up and covered the entire optic disk. It increased in size until it was about one and one half times the size of the disk, and protruded 5 D. It was easy to see that the eye would be lost by the growth of this cysticercus. Those of you who have tried to pick anything off the optic disk with a pair of forceps in one hand and an ophthalmoscope in the other can realize the difficulty—I had a pair of double reverse action forceps, where one blade revolves in the other. By making an incision between the external and the interior rectus, I brought the tip of the forceps to a level with the cyst and saw that the blades were each side of it, then I closed the forceps and removed the top of the cyst. Immediately the forceps were closed the fluid flowed into the vitreous and I got only the top part of the cyst itself. It required two operations for in the first one the vitreous clouded from hemorrhage. I made the puncture with a Graefe knife, but on account of the hemorrhage I had to wait two days before operating a second time. The patient was fine for about a month, could see finger movements, and the interior of the eye was clearing when she had an intra-ocular hemorrhage, pain for two or three days, the lens pushed forward, the anterior chamber was shallow, and the lens became opaque. The eye quieted down and remains as good as an artificial eye.

This is the only case of cysticercus I have ever seen.

Dr. A. E. Davis, New York: I wish to report briefly a case which came under my own care. I kept this gentleman, aged 57, under observation for a number of years. He died recently. He suffered from migraine, and always had poor vision. The ophthalmometer showed astigmatism with the rule 2 D axis 90 plus 180—right eye, with the rule 2 D axis 75 plus 180—left eye. The patient, however, accepted a strong cylindric glass against the rule, as follows:

R. V.=20/200 : 20/50 w—5 D=—2.50 cyl. 90° L V.=20/200 : 20/30 w—1 D=—3 C 75°

Reads Jaeger 1 from 9″ to 15″ w—1 D=—2.50 cyl. 90° Rt. plus 3 cyl. 165° left.

Because of the great discrepancy between the astigmatism, as indicated by the ophthalmometer, and that found on subjective examination, some trouble with the lens was suspected, an incipient cataract, perhaps. On examination with the ophthalmoscope, no opacity of the lens whatever was found, but a transparent protuberance of a conical shape on the front surface of the lens of each eye. The corneas were perfectly clear, except for a very minute opacity just to the outer side of the center of the left. The shadows reflected from the pupil resembled in a marked degree the shadow-crescents seen in conical cornea.

Dr. S. D. Risley, Philadelphia: Simply as a matter of historical interest I thought this might go on record in the transactions of this section: While making some historical studies last year, I took pains to go over the printed book in which the cases reported had been kept by the secretary of the Philadelphia Ophthalmological Society, which was founded in 1871, and lived three years. During that time a general surgeon, Dr. Richard Levis, presented to the society a case in which the cysticercus in great abundance was found in the orbit under the internal rectus muscle.

Dr. George E. de Schweinitz, Philadelphia: Operative success in intra-ocular cysticercus depends largely on the position of the parasite; success has most often been obtained where it was subretinal. If free in the vitreous the effort to secure the parasite is most difficult.

Dr. Meyer Wiener, St. Louis: I had no difficulty in putting the forceps around the part of the cysticercus which I desired to grasp. I could see it very plainly, and see the forceps passing around the cyst. I had no hemorrhage, but when I closed the forceps and tried to withdraw it, it was the same sensation as if you took a pair of forceps and tried to pick up a piece of jelly. It closed over the cyst but there was nothing there between the points of the forceps.

Vaccination Against Typhoid in Spain.—Professor Peset, director of the Instituto Provincial de Higiene at Valencia, delivered by request last December an address on this subject at the Paris Faculté de médecine. His figures show that active work has been done in this line in military and civilian circles in Spain and fine results accomplished. In the army at Tetuan in 1914, for example, there were no deaths from typhoid among the 12,000 vaccinated and only 2.61 per thousand cases developed. He relates a number of striking instances showing the protection conferred by the vaccination; the one or two persons in large families who refused vaccination were the only ones who contracted typhoid during an epidemic, notwithstanding that there was no isolation, one of the vaccinated even sleeping with the typhoid patient. At Cheste, there was not a case of typhoid among the 1,200 vaccinated while there were 171 cases among the 4,800 nonvaccinated. Similar figures are cited from the epidemic at Moguer in 1915, no cases of typhoid among the 363 vaccinated and 300 cases among the 7,631 nonvaccinated. Also from the epidemic at Torrente in 1917, no cases of typhoid among the 3,330 vaccinated and 407 among the 5,011 nonvaccinated. During 1918 vaccination of the members of the family whenever a case of typhoid developed at any point arrested the infection before it had a chance to assume epidemic form. Various types of vaccine are used. His address is reproduced in full in the *Laboratorio* of Barcelona **3**:97 (March) 1919.

THE ACTION OF RADIUM ON CATARACTS *

MARTIN COHEN, M.D.
Professor of Ophthalmology, New York Post-Graduate Medical School and Hospital

AND

ISAAC LEVIN, M.D.
Clinical Professor of Cancer Research, University and Bellevue Hospital Medical College; Chief of the Department of Cancer Research, Montefiore Home and Hospital

NEW YORK

Until recently there was no agent known that could in the slightest degree change or influence the natural course of the development of a cataract from its period of incipiency to maturity. Surgery had reached a high degree of perfection and was followed in the majority of cases by a clinical success which meant restoration of vision. Surgery, however, does not influence or change the development of the lenticular opacification but simply removes the entire lens.

A great many attempts have been made to influence the development of cataract by chemical means, but as yet without success. In the last decade, however, a great deal of progress has been reported in radium therapy as applied to various pathologic conditions, and the field of usefulness of the biologic action of radium in the domain of therapeutics is constantly widening. Furthermore, a great many eye conditions, such as trachoma, vernal catarrh, and various tumors of the eyeball and adnexa, have been treated with radium without in any way impairing the normal structure of the eyeball or impairing its function.

One of the writers, who has done some research on the subject of chemotherapeutics of the cataract with entirely negative results, raised the question whether one might not expect that the radioactive substances may exert an influence on the development of the cataract. An *a priori* consideration of the subject showed the likelihood of such an influence by the radium rays.

As admitted by the best authorities on the subject, the capsular epithelium is most probably the starting point of cataract. Indeed, it is inconceivable that the change, or the precipitation, as it were, of certain soluble ingredients within the lens which result in the formation of the opacifications could take place without a change in the structure of the barrier membrane, which the capsule is; and since the capsule is essentially a product of cell life, the change in the barrier must be due in the ultimate analysis to an abnormality in either the structure or the function of these cells.

There is ample biologic and clinical evidence that radium produces various and very deep changes in cellular functions. In tumors and granulomas, the action of the rays consists in the inhibition of the proliferating capacity of the cells; in conditions like exophthalmic goiter, it influences and alters the functions of the cell. It is thus evident that the radium rays may alter or influence the capsular epithelium in such a manner as possibly to render the whole capsule less permeable for the abnormal agents within the general circulation or in the neighboring tissues, which later on entering the lens produce the opacifications; or else the change in the membrane may consist in its enhanced ability to exosmose certain substances from the lens, and the lack of the latter may result in formation of opacities.

A thorough search of the literature showed that there had been no attempt made by any investigator to influence cataract with radium, with the exception of Koster.[1] This investigator applied radium to a great variety of eye diseases, apparently in a large number of cases. While he does not state definitely the number of cases of each disease treated, he reports on over twenty diseases, and as regards some of these diseases he distinctly states, "I have treated as many as twenty or more patients." Among others, he reports on treatment of cataract, with negative results, but states that in a case of cataracta caerulea—the star form in the anterior cortex—the opacities fell to pieces and disappeared entirely after five sittings of one hour weekly.

The method of radium therapy employed by Dr. Koster is not in accord with the modern conception of the subject. None the less, he apparently obtained favorable results in certain conditions, and there was no deleterious effect observed on the retina or on the other ocular structures. Dr. Koster used a glass tube filled with radium which he placed, uncovered and unprotected in any way, directly to the scleral conjunctiva. This is a dangerous method, since all of the soft rays remained unfiltered and could irritate and burn the adjacent tissue. In this connection, it is remarkable that an amount of radiation which would have surely caused a burn on the skin did not cause a burn of the scleral conjunctiva. It must be admitted that he used much smaller quantities than are employed at present. The therapeutic results obtained by Koster, notwithstanding his inadequate methods, the harmlessness of the procedure, which was shown by him as well as by the investigators who treated epitheliomas of the eyelids, and also the theoretical considerations mentioned above encouraged us to commence this investigation.

METHODS EMPLOYED BY THE AUTHORS

The methods employed were very similar to the technic of deep radium therapy which one of us is using at present in the treatment of malignant tumors and various other conditions. For a clear understanding of these methods it is necessary to explain here very briefly certain physical characteristics of radium.

Radium emits alpha rays, beta rays, and gamma rays. The first two act only as a general caustic on all the tissues found on the surface to which the radium is applied. The hardest beta, and especially the gamma rays, have a selective action which causes their efficacy in the treatment of deep conditions. The selectivity of the rays consists in the fact that they may influence pathologic structures while leaving the neighboring normal tissues practically intact. These gamma rays represent only about 1 per cent. of the total amount of radiations. When Koster employed in his tube 2 mg. in gamma radiations to do the work, there were possibly not enough soft radiations to injure the normal tissue; but, on the other hand, he had only an extremely small amount of gamma radiations to do the actual work. In modern technic, ten, twenty and more times the amount of radium used by Koster is employed. With the aid of various means which it is not necessary to discuss here, all the irritating soft

* Read before the Section on Ophthalmology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

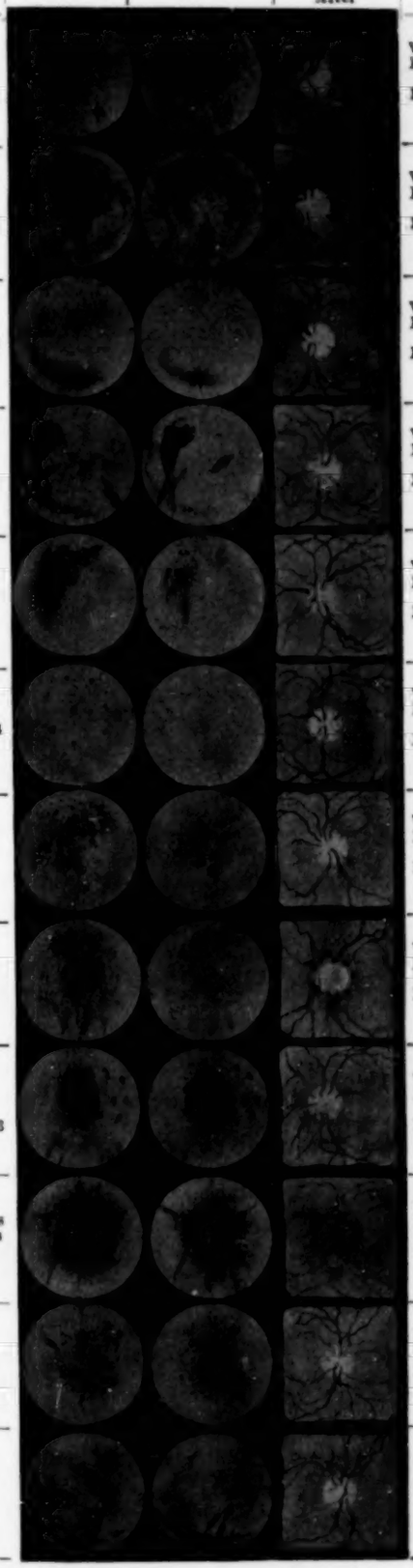
1. Koster, cited by A. F. Mattice: Arch. Ophth. **43**: 237, 1914.

ACTION OF RADIUM ON CATARACT

Name	Age	Type of Cataract	Location	No. of Applications	Date of Visits		Radium Application				Results
							Vision		Lens Opacification		
					First	Last	Before	After Last	Before	After Last	
J. V. 1	45	Senile immature (right)	Anterior cortex	30	Mar. 20/18	Mar. 31/19	Counts fingers at 1 ft.	Counts fingers at 3½ ft.			Vision, improved Lens Opacity, diminished Fundus, no deterioration
J. P. 2	75	Senile immature	Central and posterior cortex	32	Apr. 2/18	Mar. 31/19	20/70	20/50			Vision, improved Lens Opacity, stationary Fundus, no deterioration
O. M. 3	33	Complicated (retinitis pigmentosa) immature	Anterior and posterior cortex	40	May 19/18	Apr. 1/19	Counts fingers at 3½ ft.	20/70 −1			Vision, improved Lens Opacity, diminished Fundus, no deterioration
J. D. 4	50	Complicated (irido-cyclitis) immature	Anterior cortex	33	June 8/18	Mar. 31/19	Counts fingers at 8 in.	Counts fingers at 3 ft.			Vision, improved Lens Opacity, diminished Fundus, no deterioration
F. S. 5	58	Senile immature	Anterior cortex	14	June 19/18	Mar. 31/19	Counts fingers at 3 ft.	Counts fingers at 3 ft.			Vision, stationary Lens Opacity, diminished Fundus, no deterioration
J. K. 6	47	Senile immature	Posterior cortex	23	June 19/18	Mar. 31/19	20/30 +1	20/15 +2			Vision, improved Lens Opacity, diminished Fundus, no deterioration
L. G. 7	52	Senile immature	Posterior cortex	28	July 21/18	Mar. 31/19	20/100 −1	20/30			Vision, improved Lens Opacity, diminished Fundus, no deterioration
A. R. 8	62	Complicated (glaucoma) immature	Anterior cortex	36	July 25/18	Mar. 3/19	20/40 −1	20/20 −4			Vision, improved Lens Opacity, stationary Fundus, no deterioration
F. G. 9	75	Senile immature	Posterior cortex	29	Aug. 13/18	Mar. 31/19	With correction 20/20 +2	With correction 20/20 +2			Vision, stationary Lens Opacity, stationary Fundus, no deterioration
C. G. 10	62	Senile immature	Central and posterior cortex	21	Aug. 29/18	Mar. 31/19	20/100 −1	10/200			Vision, decreased Lens Opacity, diminished Fundus, no deterioration
S. K. 11	50	Senile immature	Central and anterior cortex	23	Sept. 3/18	Mar. 20/19	20/40	20/30			Vision, improved Lens Opacity, diminished Fundus, no deterioration
C. R. 12	64	Senile immature	Anterior and posterior cortex	21	Sept. 5/18	Mar. 20/19	20/200	20/200 −1			Vision, stationary Lens Opacity, diminished Fundus, no deterioration

ACTION OF RADIUM ON CATARACT.—CONTINUED

Name	Age	Type of Cataract	Location	No. of Applications	Date of Visits		Radium Application				Results
							Vision		Lens Opacification		
					First	Last	Before	After Last	Before	After Last	
R. K. 13	74	Senile immature	Anterior cortex	27	Sept. 7/18	Mar. 20/18	20/70 − 2	20/50			Vision, improved Lens Opacity, stationary Fundus, no deterioration
L. L. 14	53	Senile immature	Anterior cortex	8	Sept. 19/18	Mar. 20/18	20/200	20/100 − 1			Vision, improved Lens Opacity, diminished Fundus, no deterioration
I. S. 15	49	Senile immature	Posterior cortex	20	Sept. 25/18	Mar. 20/19	20/30	20/15 + 2			Vision, improved Lens Opacity, diminished Fundus, no deterioration
R. M. 16	56	Senile immature	Posterior cortex	13	Sept. 20/18	Mar. 20-19	20/100	20/50			Vision, improved Lens Opacity, diminished Fundus, no deterioration
I. W. 17	73	Senile immature	Posterior cortex	17	Nov. 7/18	Mar. 10/19	Counts fingers at 6 ft.	20/50			Vision, improved Lens Opacity, diminished Fundus, no deterioration
A. R. 18	62	Senile immature	Anterior cortex	15	Nov. 7/18	Mar. 16/19	20/30 − 4	20/30 − 4			Vision, stationary Lens Opacity, disappeared Fundus, no deterioration
J. V. 19	45	Senile immature (left)	Anterior cortex	4	Jan. 29/19	Mar. 25/19	20/40	20/30			Vision, improved Lens Opacity, diminished Fundus, no deterioration
P. S. 20	38	Complicated (glaucoma) immature	Anterior cortex	9	Jan. 19/19	Mar. 25/19	Counts fingers at 6 ft.	20/30			Vision, improved Lens Opacity, diminished Fundus, no deterioration
H. D. 21	48	Senile immature	Central and posterior cortex	7	Jan. 31/19	Mar. 20/19	20/40 − 3	20/40 − 3			Vision, stationary Lens Opacity, diminished Fundus, no deterioration
F. I. 22	56	Senile immature	Anterior and posterior cortex	6	Feb. 1/19	Mar. 20/19	Counts fingers at 4 ft.	Counts fingers at 4 ft.			Vision, stationary Lens Opacity, stationary Fundus, no deterioration
M. A 23	58	Senile immature	Posterior cortex	5	Feb. 1/19	Mar. 20/19	10/200 myopia	10/200			Vision, stationary Lens Opacity, diminished Fundus, no deterioration
P. M. 24	67	Senile immature	Posterior cortex	5	Feb. 13/19	Mar. 20/19	20/70	20/70			Vision, stationary Lens Opacity, stationary Fundus, no deterioration



rays are filtered off and only the selectively acting gamma rays are utilized. The actual technic consisted in covering the radium with brass, photographic paper and gauze, and placing it over the closed eyelid. The distance between the radium substance and the eyelid was about 2 cm. The application usually lasted two hours.

The main difficulties that an investigator encounters when he attempts to test the efficacy of any measure on the development of a cataract is the fact that the disease is frequently very slow in progressing and may remain stationary for a long period. It is even assumed by some authors that occasionally a cataract may spontaneously improve for a time. None the less, it is the experience of every ophthalmologist that by far the greater number of senile cataracts follow the usual course and mature in a period of from six months to two years.

A statistical analysis of 131 cases reported by Dr. Nevens of the Liverpool Eye and Ear Infirmary is very characteristic of the usual experience. Of his cases, seven, or 5 per cent., matured in less than one month; twenty-six, or 20 per cent., matured in a period of between one and six months; thirty, or 23 per cent., matured within one year; thirty-five, or 27 per cent., matured in two years; nine cases, or 7 per cent., in three years; seventeen, or 13 per cent., in between three and seven years; and seven cases, or 5 per cent., in between twelve and twenty years, thus giving a total of 75 per cent. that matured within the first two years and only 18 per cent. that took more than three years to mature.

It is thus clear that in a certain number of consecutive cases selected for study, not less than three fourths of such cases, in the natural course of events, would reach maturity within two years, and would consequently have to show a good deal of progression within the first year.

The material used for the present investigation consisted of all the cases of immature cataracts seen by one of us in his routine clinical and private practice during the time of the investigation, twenty-four cases being included.

Twenty patients had senile cataracts of the usual type. In the majority of the cases, both eyes were affected, but only one eye, which was less mature, was treated. Four cataracts were complicated; one was due to a retinitis pigmentosa, one to an iridocyclitis, and in two instances chronic glaucoma was present. An iridectomy was performed in the latter cases, but the cataract was not due to any trauma. None of the patients suffered from true diabetes or nephritis, with the exception of one who showed sugar, traces of albumin, and a few hyaline casts. The type, extent and location of each cataract is noted on the accompanying chart.

Three of the patients received applications of radium for one year; three for eleven months; two for ten months; two for nine months; six for eight months; two for seven months; three for four months, and three for three months.

The result of the radium treatment in these cataracts as regards vision and lens opacification is as follows: There was a combined improvement in the lenticular opacification and vision in twelve cases; lens opacification disappeared in one case without improvement in vision; opacification diminished in five cases with stationary vision (in one case vision decreased); opacification was stationary but vision improved in three cases; both vision and opacification remained stationary in three cases. In a word, twenty-one cases, or 87.5 per cent., showed some improvement.

The method of procedure in the examination of these cases consisted of the usual methodical examination of the eye, including also an examination of the urine, and physical and blood examinations when deemed essential.

The examination of the visual acuity and the drawings of the lenticular opacities required especial attention to several details, as follows: The illumination of the room and the test charts was of the same character at each examination. Several corresponding letters, numbers, and illiterate charts were used. After the results of the visual acuity test, functional test, and the refraction were determined and recorded in each case, the pupils were dilatated with a 1 per cent. homatropin solution for the purpose of examining the details of the fundus and also for a detailed drawing of the opacification. A combined focal examination was made of the lenticular opacity, namely, with a condensing lens and a corneal loop, and then a drawing of this opacity was recorded. The cataract was next observed with the Loring ophthalmoscope through its aperture, the patient always fixing a definite object in space, in order to procure a good view of the entire opacification, and a drawing of it was made. A 20-diopter lens was then inserted in the aperture of the ophthalmoscope for a drawing of the finer details of the lens opacification. In order that the latter examination should be accurate, a distinct fixed opacity of the lens was noted at a definite angle with a strong convex lens in the ophthalmoscope. Then another drawing was made of the opacification; this drawing also served as a guide for future examinations. Finally a drawing was made of the fundus details with the aid of a Loring ophthalmoscope. In a certain number of cases an electric ophthalmoscope was necessary to view the fundus, as the opacity was very dense. Four drawings were made of each case before radium was applied, and subsequent drawings were made at stated intervals.

The chart presents graphically the type of the cataract, the extent of the opacification, the length of time during which the treatment was continued, the number of treatments given, and the results obtained, so that it is hardly necessary to give in the text a detailed history of each individual case. Therefore only some of the cases which present salient features will be discussed in greater detail.

REPORT OF CASES

Case 1.—*Senile Cataract.*—Examination before the application of radium gave the following results: The patient was able to count fingers at 1 foot. With focal examination the lens had a diffuse grayish appearance; with the ophthalmoscope a faint fundus reflex was obtained through the periphery of the lens. Five days after treatment began the patient could count fingers at 3 feet; ophthalmoscopic examination of the lens showed it to have a diffuse grayish aspect, while from its periphery a large fundus reflex was visible. Seven days after the beginning of treatment the patient could count fingers at 4 feet; oblique examination showed the lens to be of a grayish color, having a few whitish dots and small striae scattered near the central area; the ophthalmoscope revealed a much larger fundus reflex, with distinct sector striations radiating from the periphery of the lens. The improvement obtained remains to date, and consequently there has been no progression of the disease during a period of ten months. It is of particular interest to note that in this case

the vision today, ten months after the beginning of radium application, is better than before the radium treatment began; furthermore, a nearly complete fundus reflex is now obtainable, whereas before the application of the radium only at a narrow rim around the periphery was a faint reddish reflex transmitted from the fundus.

CASE 3.—*Complicated Cataract (Retinitis Pigmentosa).*—The patient gave a history of syphilitic infection occurring seventeen years previously. He received antisyphilitic treatment for several years, but had had none for two years before coming under our observation. The Wassermann blood reaction was positive. Disturbance in vision was first noticed thirteen years before; the vision gradually deteriorated, regardless of frequent syphilitic treatment. The first examination was made on May 19, 1918. The vision of the right eye was 20/200; with the left eye the patient counted fingers at 3½ feet. The field was markedly contracted concentrically; the fundus details, though cloudy, showed the typical picture of the disease. Ophthalmoscopic examination of the lens and fundus showed a distinct fundus reflex, which allowed the lenticular opacifications to be studied; they consisted of anterior and posterior cortical opacifications; the anterior had a sector arrangement, the posterior was curvilinear, and in between these opacifications a fine granular appearance was seen with here and there evidences of small globules or vacuoles. One week after the beginning of the radium application the left eye was examined, and the condition found was as follows: Vision equaled counting fingers at 7 feet. The fundus details were more clearly seen, the striations were less apparent, and the vacuoles or fine globules were more evident. No change was noticed in the papilla or in the retinal pigment. Nine days later the examination showed the vision to be 20/200. Ophthalmoscopic examination of the lens showed a larger area free from opacification; there were fewer striae, and the fine globules were more evident. Twenty-six days after the beginning of treatment the vision was 20/100—1; ophthalmoscopic examination showed more of the fundus, the striae were finer and appeared more tortuous, and the opacifications showed a distinct sector-like arrangement. Apparently the vacuoles were less numerous than at the previous examination (later they gradually disappeared entirely). This objective appearance remained stationary, but the vision improved to 20/70, Jan. 9, 1919, and has so continued to date. While this cataract is not a purely senile one, the pathologic condition in this lens is probably identical with that found in senile cataract. If the lenticular opacity were due to the syphilitic infection, one would have expected some improvement from the antisyphilitic treatment; but despite such treatment the vision deteriorated until radium applications were instituted, after which the lenticular opacification diminished and the vision improved.

CASE 6.—*Senile Cataract.*—The patient's left eye had been under observation for the previous eleven months. Examination before radium was applied showed the vision to be 20/30. Lens examination with the ophthalmoscope showed mainly an isolated peripheral opacification. The fundus was normal. Radium was first applied, June 20, 1918, and has been continued uninterruptedly to date. The lenticular opacity and vision gradually improved. Nov. 12, 1918, ophthalmoscopic examination with the aperture gave a faint shadow of the opacification, which had formerly been very evident with this method. Detailed study of the lens indicated that the opacification was less dense than before, owing to the disappearance of some of the striae and of some of the finer granules which bordered the larger opacifications. The vision was 20/15, and the fundus remained unaltered. This case represents a diminution in the opacification of the lens. The vision, which was useful at the beginning of the application, is now practically normal, and has been in this condition for the past ten months. A point of especial interest in this case is that the right eye, which had a matured cataract when first observed, received several applications of radium during the first month. It was then extracted without any technical difficulties, and a very good functional result was obtained; yet the patient, who is a baker, claims that he could do his work better before, when he had one blind eye and the other with a vision of 20/30 than he can today when the right eye is aphacic and the left has a vision of 20/15.

CASE 7.—*Senile Cataract.*—The patient has been under observation for the past ten months. The first examination was made, July 11, 1918. The vision at that time was 20/100. The lenticular examination showed three prominent radial sectors and peripheral curvilinear opacifications. Between these striae a moderate amount of opacification was apparent. The vision gradually improved under radium treatment, being 20/30, Sept. 9, 1918; but the opacifications, which had remained unaltered to this date, did not disappear until March 12, 1919, when a redder fundus reflex was distinctly apparent in this area. The important point in connection with this case is the fact that whereas the improvement in vision began a few weeks after the first application of radium, the diminution in the opacification did not appear until eight months after the beginning of the treatment, indicating that the action of radium may be continuous and cumulative in cataracts as well as in malignant tumors. In this case also the other eye, with a mature cataract, was treated before extraction. No technical difficulties were encountered during operation, and a good functional result was obtained.

CASE 15.—*Senile Cataract.*—The vision was 20/30; hypermetropia, 0.75; corrected to 20/20. Lenticular examination showed a broad peripheral curvilinear opacity. The fundus was normal. The patient complained mainly of floating opacities in the vitreous, which were muscae volitantes. The first radium application was given, Sept. 26, 1918. March 18, 1919, the vision was 20/15. The lenticular opacity was less dense and defined, while the floating opacities had entirely disappeared. After treatment it is common for these patients to observe that these muscae volitantes have disappeared.

CASE 17.—*Senile Cataract.*—The urine examination showed sugar, albumin and granular casts. The patient could count fingers at 6 feet. The lenticular opacity consisted of an extensive opacification of varying density. The fundus examination showed a blurred disk margin. Radium was applied, Dec. 27, 1918. Feb. 22, 1919, the vision was 20/70. The lenticular opacity became less dense in its central area and also on its nasal aspect. March 23, 1919, the vision was 20/50; the lens condition and the fundus were not altered. In view of the striking improvement in vision, and by analogy with Case 7, it is quite likely that in the next few months the opacification in this case will show further diminution.

CASE 18.—*Senile Cataract.*—Dec. 25, 1918, the patient's vision was 20/40+1. The lenticular opacity consisted of numerous small granules in the anterior cortex. The fundus showed a few grayish spots on the nasal side of the disk, of vascular origin. Feb. 20, 1919, the vision and fundus were unaltered, but the granules were distinctly less numerous. February 27, after repeated examinations, the small granules could not be seen. The vision and fundus were unchanged. The importance of this lies in the fact that the disappearance of the small granules after two months of treatment indicates that an early small cataractous formation may be cleared up by radium.

COMMENT

It is extremely difficult to obtain a correct estimate of changes occurring in the course of the development of a pathologic process which is so extremely chronic and protracted as a cataract usually is. Nevertheless, it appears to us that some of the phenomena observed are so striking and characteristic of the influence of the radium rays on the processes that it is impossible to conceive of them as mere coincidences.

Of the twenty-four cases studied, in 87.5 per cent. there has taken place some change for the better. As a rule, this improvement occurred in the first few weeks of treatment. After that, the condition usually remained stationary during the period of observation. But it must be understood that it was the improved condition which remained stationary, and in no

instance within the 87.5 per cent. did the lenticular opacification retrograde to the original condition as found before the initiation of the radium treatment.

In studying the changes which took place in the treated cataracts, three phenomena, depending in these patients on the function of the cataractous lens, were considered: namely, the vision, the appearance of the lens, and the visibility. By vision, was meant the amount of visual perception obtained by the patient through the cataractous lens; by the appearance of the lens, was indicated the amount and character of opacification found in the lens on an examination by the aid of transmitted light and by focal illumination; by visibility, was meant the ability of the ophthalmologist to perceive a more or less clear image of the details of the fundus through the cataractous lens.

A study of the results shows that in a certain number of cases both the vision and the amount of opacification were definitely improved; in a second group of cases the opacifications diminished, but there was no improvement in vision; in a third group, the vision was improved, while there was no change observed in the amount of opacification. In a few cases of this group an impression was gained that a brighter fundus reflex was obtained after treatment.

It is self-evident that the patients in the first group were improved. It is also easy to understand that an improved or diminished lenticular opacity may not be accompanied by any improvement in vision. The amount of vision which a cataract patient possesses depends more on the location of the opaque area within the lens than on the extent of the opacification. Striae, sectors, and large granules situated in the peripheral region may not impair the vision at all; while a smaller area of opacity situated in the center of the lens may very markedly affect the vision though not a great deal of the lens is involved. It is thus possible that certain striae or granules may diminish in size or completely disappear without in any way improving the vision. The greater objection may be raised that both the improvement in vision and the brighter fundus reflex are characteristics of too subjective a nature to be considered as clinical improvements without the supporting evidence of a change in the objective findings in the lens opacification; none the less, it must be granted that it is quite conceivable physiologically that both the vision may be improved and the fundus may appear brighter, and still no objective change in the picture of the lenticular opacification be noted.

If for the purpose of our discussion we regard a normal lens as analogous optically to a transparent fluid, then we may consider a diffuse lenticular opacification as analogous to an opaque emulsion consisting of minute granules evenly distributed in a transparent fluid. When the number of these granules is very great, or in other words the diffuse opacification is very dense, then no red fundus reflex can be obtained; when the number of granules is less or the diffuse opacification is not so dense, then we observe a faint reddish reflex from the fundus. Furthermore, when an objective finding has shown that such a red fundus reflex has become brighter, such a phenomenon can only have been caused by the disappearance of a certain number of the minute granules from the opaque lens. That these minute granules may disappear under the influence of radium is evident from the fact that in a certain number of our cases much larger granules disappeared under treatment.

This diminution of the quantity of the granules must be followed by both a brighter fundus reflex and some improvement in the vision of the patient.

We therefore maintain that while the best results were obtained in those cases in which there appeared an improvement in all the three phenomena described, we must also consider as improved clinically those cases in which there was direct improvement only in vision or in visibility. On the basis of such calculation there were in all twenty-one cases improved.

These twenty-one cases, or 87.5 per cent., represent such a high percentage of the cases treated that it is impossible to consider the result a mere coincidence. Furthermore, with the exception of one case, it was possible to maintain this diminution of the opacification as well as the improvement in vision and visibility during the period of observation, which was in every case not less than a few months, and in view of the fact that the majority of cataracts mature within a period of two years, most of the cataracts treated should have shown a certain amount of progression.

The time of observation is too short to determine whether this initial improvement can be maintained under treatment at stated intervals, or whether sooner or later the radiation will cease to be effective and the cataracts go on to maturation; but the results thus far obtained are very striking.

The biologic phenomenon that the course of development of a cataract may be, temporarily, at least, altered or inhibited by the action of the rays is fairly well established by this study. Furthermore, this investigation leaves no doubt as to the harmlessness of this agent. In order to establish the fact that any amount of the most intensive radiations leaves untouched the other structures of the eye outside of the lens, many of the patients were given longer and more frequent applications of radium than were actually needed. Moreover, in the beginning of the study larger quantities of radium were employed than are being used at present, and still there was no ill effect.

It is of importance to add here that five cases of matured cataract were also treated with large amounts of radium in order to ascertain whether a preoperative radiation would interfere in any way with the technic or the functional results of a subsequent operation. These patients were then operatd on. No difficulties were encountered in the course of the operations, and the postoperative results were as favorable as the results in the nontreated eyes.

We therefore submit that, since there is no other agent in the therapeutic armamentarium which can influence the development of cataract in any degree at all; since surgery at its best leaves an aphacic eye which for practical purposes is frequently less satisfactory than the partial vision of a patient with an immature cataract; in view of the further fact that it is absolutely established that radium does no injury to the eye and does produce some, if ever so slight, biologic alteration in the lens, it is imperative that these clinical investigations of radium therapy in cataracts be continued by competent investigators, the subsequent results checked, and a definite conclusion reached.

SUMMARY

1. The application of radium to the eye is harmless.

2. There is diminution of lenticular opacifications under the influence of radium.

3. Should a cataractous lens become matured subsequent to radium treatment and should then an operation be required, no difficulties will present themselves.

4. It is therefore advisable to submit a sufficiently large number of immature cataracts with useful vision to a proper course of radium treatment so that a correct estimate of the value of the method may be obtained.

ABSTRACT OF DISCUSSION

DR. ISAAC LEVIN, New York: I am merely a radium therapeutist, and it is not for me to pass judgment on the clinical results. In fact, I will take it for granted, for the sake of argument, that we have thus far shown nothing, and that I stand today exactly where I did one year ago when Dr. Cohen asked me whether it is permissible or advisable to try radium in cataracts. When a new agency in therapy is applied to the human organism, the first requisite is "do not dare to do any injury." That must be borne in mind. I want you to understand that radium application, in the quantity, quality and dosage as used today in therapy of malignant diseases, does not injure any normal tissues of the organism with the exception of the epithelium of the skin, of the leukocytes, of the spermatozoa and the graafian follicles. All other tissues of the body resist the rays and are not injured by it. Nerve tissue, ganglion cells of the brain and the structures of the eye, are the most resistant tissues to the action of the rays. There is ample evidence in the literature as well as in my own work, that the largest amounts of radium employed in therapy do not destroy or injure normal tissues of the eye. I shall cite a case to illustrate this contention. I have a patient at the Montefiore Hospital who is suffering from sarcoma of the right upper jaw and the antrum. For the last year large doses of roentgen ray and radium were applied. The radium tubes were buried in the tumor, right near the orbit. The bone of the floor of the orbit is destroyed by the tumor so that the radium tube was lying for twenty hours at a time on several occasions right under the right eye. The roentgen rays were applied in the mouth also close to the eye. The eye remains absolutely normal now after one year of treatment. Thus intensive radiations correctly applied do not injure the eye. The next question is, how does the radium affect the lens? There is ample experimental evidence that it does not injure a normal lens. What may its influence be on a cataractous lens? We maintain that radium arrests the development of the cataract, and consequently has a beneficial influence on the condition. But even if further investigation should show that it has no such effect on a number of cases, it still does not injure the remainder of the organ. Therefore, the radium application in incipient cataracts should be employed for a number of years and thus a true estimate of the method obtained.

DR. ALLEN GREENWOOD, Boston: For the past fifteen years I have been following out a line of treatment which I have realized lessened my operative work in cataract cases to a marked degree. In my experience lenses showing a few spicules down and in are little affected and develop slowly; this is true also of nuclear opacities occurring in the highly myopic, and cases in which, besides the spicules, there are nebulous clouds or fine granular spots throughout the lenses, which are the vast majority of cases that interfere with vision. I give a hopeful prognosis and at once institute the following treatment: One per cent. solution of dionin (ethylmorphin hydrochlorid) is dropped into the affected eye three nights out of each week, and after a few months three nights out of every other week. It is well known that the continuous use of dionin will be of little value, but used as above, this drug, which is the one which most markedly affects the lymph circulation and hence the capillary circulation, exerts a decided influence on the nutrition of the lens. The often repeated effect of this improvement in circulation will frequently dissipate lenticular opacities and retard their future development.

DR. E. L. JONES, Cumberland, Md.: Some time ago I published a pamphlet on "The Usefulness of Dionin in Early Senile Cataract," and another one on the arrest of cataract in its early stages. I have used this treatment for more than ten years and I have a number of patients whose vision after a lapse of ten, eight, and six years, still continues to show improvement, and it was brought about through treatment of this character in the early stages of the disease. It is of little use in the later stages. In cases of reading vision, a few doses of dionin will clear up the dust formation or mist; but while the cataract will clear up the spicula remain. The cataract is like a thicket, with leaves on the twigs and branches in the summer time; and after the summer, the leaves fall off and the twigs and branches remain. That is comparable to the spicula. I use dionin with mercuric cyanid, and it works well in a majority of cases.

DR. JOHN E. WEEKS, New York: We all recognize that cataract is due to an interference with the nutrition of the crystalline lens. The epithelium of the anterior portion of the capsule is defective, as shown by Hess. There is the development of granules and minute hyaline globules forming liquor morgagni, and in addition there is erosion of the fibers of the lens to some extent where the gray spiculae are found. A disappearance of the cloudiness of the lens by absorption of the granules and the globules is sometimes observed. This is all we can hope to produce. We cannot cause the opacities due to erosion of fibers to disappear. In my opinion increase in the nutrition of the crystalline lens, either by improving the patient's general condition or by increasing the circulation in the anterior segment of the globe, may cause an arrest of development of cataract in some cases, a retardation in the development in some, and will be without effect in others. For the last thirty years I have been working on this hypothesis. I have used drops consisting of glycerin, boric acid and water. The glycerin produces a hyperemia of the anterior segment of the globe at every application, and may be used indefinitely without harm. I have discarded dionin, as it produces stimulation only over a short period of time. Dr. Greenwood has permitted an interval to elapse after using it three times, so that when used again it produces a further stimulation of the circulation. He has reached results similar to my own. It is immaterial what agent you employ provided it is harmless and sufficient stimulation is produced. I have observed the results of the use of glycerin in considerably more than 1,000 cases in private practice, records of which are in my office. The results have been satisfactory in perhaps a higher percentage of cases than that reported by Dr. Cohen as having been obtained in the treatment with radium.

DR. F. PARK LEWIS, Buffalo: There is an element of danger in allowing the impression to go out that this is a remedy for cataract and that it can be used without danger. I am not sure about that, for certainly it cannot change the metabolism of the lens and at the same time do no harm. Furthermore, I do not think we should employ a remedy empirically, which does not take into consideration the origin of the disturbance. The metabolic changes which have taken place in the lens are frequently the result of toxins in the system, from focal and other infections in the teeth or tonsils. Any remedy is unscientific which does not take into account the cause of the trouble which we are trying to control.

DR. S. D. RISLEY, Philadelphia: For many years I have been interested in the etiology of cataracts. I presented my first paper on the subject in 1889. The paper was based on eighty-six cases of beginning opacity of the lens, in each of which the record was sufficiently complete for analysis. During the intervening years, following a careful study of the eyes of the schoolchildren in Philadelphia made from 1878 to 1881, I recognized fully the importance of choroidal disease, since it was present in all of the eyes which had become myopic in the schools. Therefore, when any patient came into my office, after this fact had been grasped, no matter what the age of the patient, I treated the choroidal inflammation often by persistent and prolonged use of atropin and corrected any existing refraction error. It was very soon

observed that patients with incipient cataract, were greatly benefited by this treatment. Not only were they relieved from asthenopia, but the swelling and opalescence of the lens grew less and the sharpness of vision as shown by the test card often improved. While I have never seen spicules or banks of opacity disappear, in any case, I was convinced by these studies of the importance of choroidal disease over the nutrition of the avascular tissues: the lens, the vitreous body and the cornea. All cases of refraction error had therefore been treated by more or less prolonged use of mydriatics and careful correction of refractive defects and abnormalities of binocular balance. In eighty-six cases I found incipient cataract, as I have stated. The records were sufficiently complete for analysis, and there had been found refraction defects, choroidal disease and degenerating vitreous. To my surprise and gratification the opacity of the lens had not advanced after the treatment. The vision in many cases had improved; the asthenopia had disappeared, and the eye remained well after many intervening years. This experience was first published in 1889. Many hundreds of persons have been treated since, but added experience has but served to confirm the views then expressed. The essential fact in all this was the importance of uveal disease as a factor in the impairment of the nutrition of the avascular structures of the eye: the vitreous body, the crystalline lens and the cornea. In a large percentage, constituting the majority of the cases coming under study, the choroidal disease was associated not only with commencing opacity of the crystalline lens, but with a degenerating vitreous; dilated anterior ciliary vessels and uncomfortable eyes with failing vision. So frequently were the anterior ciliary vessels dilated, that I have come to regard this condition as an indication of uveal disorder. It soon became obvious also that the uveal disease was often but a local expression of some systemic disorder, as cardiovascular disease with kidney involvement. Indeed, I believe that the uveal tract of the eye is as liable as are the kidneys to participation in systemic dyscrasias, and therefore, that the treatment of these affections is often quite as important as any local measures which may be adopted.

In addition to the prolonged use of the mydriatic, of which I have no dread, even in aged people, I have often used at the same time twice daily, weak solutions of physostigmin (eserin) salicylate, especially where the anterior ciliary vessels were engorged. This drug has been used because I believe it contracts the blood vessels and so stimulates the circulation which would be quite in accord with the suggestion made by Dr. Weeks.

Dr. G. J. Savage, Nashville, Tenn: Several things can be done in incipient cataract. I endorse practically everything they have said; but there are two things they have not said, and my experience with one of these for twenty-five years makes me a strong believer in its efficacy. One of the two suggestions comes from Dr. Woodruff, and that is, "Why may not the Crooke lenses do these patients some good?" The other thing I have been using for twenty-five years in every case of incipient cataract. It is a cell-building dose of mercuric chlorid and potassium iodid. Cataract will not develop when there is normal nutrition in the anterior segment of the eye. Anything that will improve cell-activity in this part will help the cataract condition in its inception. One one-hundredth grain of mercuric chlorid and 1 grain of potassium iodid after each meal for five weeks, and then one week of rest, and then five weeks of treatment and one week of rest, and so on, will check the cataractous changes which have just begun, in many instances.

Dr. A. S. Green, San Francisco: Following my return from India five years ago, and since then, I have been using Smith's method for the treatment of incipient cataract. This consists of a subconjunctival injection of 15 minims of mercuric cyanid, 1:4,000. Intense swelling of the conjunctiva results which subsides in from four to ten days, but the redness does not disappear inside of a month. In addition to this treatment, however, we prescribe an eyebath consisting of a 1 per cent. solution of potassium iodid, every morning and every other night. On the alternating night the patient uses one drop of a 2 per cent. solution of dionin, which is gradually increased to a saturated solution. This treatment is kept up for six months. Smith makes this point, that there is little use in giving this treatment when vision has fallen below 50 per cent. It is a treatment that can be given by any ophthalmologist, and the improvement in our hands has been as good as those reported with radium.

Dr. Edward Jackson, Denver: To go back to radium, perhaps the lack of interest in that phase of the subject has been due to the feeling that it was not available for most of us to try. I think it is important that any treatment that purports to influence a cataract should be investigated, and that the profession should arrive at some conclusion at as early a time as possible, as cataract cure without operation is all that is necessary to attract public attention to any proposed means. The possibility is before any one to use radium. It is not necessary to have a radium institute, or to be where large amounts of radium are accessible. The radium emanation has all the physical, electrical and other properties of radium salt, and will very soon be available anywhere in the country. No radium reaches maturity, that is, after thirty days it remains with very little change for a long time; but the radium emanation given off from large amounts of radium has the same properties; but it loses its property very rapidly. I think in four days it loses one half of its efficiency; and at the end of one month, it is practically inert. Since the close of the war it is possible to furnish the radium emanation anywhere. Of course, the physician can arrange for its use; on a certain day he can receive his supply and use it in a considerable number of cases. In that way it becomes practicable for a large number of us to employ and to experiment with this method. One half of the radium of the country is manufactured in Denver, and it was impossible for any of us to get any of it until the close of the war.

Dr. S. Lewis Ziegler, Philadelphia: I think that we should place on record a warning against the statement that radium cannot injure the eye when used in close contact with the cornea. Those who have seen a roentgen-ray burn of the cornea know that it is one of the most persistent and painful lesions. I have seen but one case, that of a surgeon who was wholly incapacitated by the intense pain. Relief could only be gained by enucleating the eye, although good vision was still present. The analogous action of roentgen ray and radium should make us pause, therefore, before recommending this agent to be applied by those who may prove to be careless and ignorant in its use.

Dr. Martin Cohen: I have been under the impression, possibly wrong, that from reports dionin and mercuric cyanid and other products have not been as efficient as they may appear. If the products do what is claimed, then radium is only an aid. The twenty-four patients were examined consecutively, and after treatment of three, four and five weeks, they have responded with objective results which I have tried to show on the screen. If radium is effective in epithelial growths and degenerations then it seems the cataract problem might be attacked from that point. We know that radium does not injure the capsular epithelium in normal frogs' eyes. As regards affecting the cornea, we believe that if properly applied to the cornea radium will produce the results mentioned and cause no ill effects to the structures of the eye. We are interested in this problem from the scientific standpoint, and stated that radium is applied only in early cases of incipient cataract, and that some benefit was obtained by the absorption of the lenticular opacities.

Is Your Community Fit?—Is malarial fever a health problem in your community? Has a survey been made by experts to advise as to proper methods for control? The Anopheles mosquito, carrier of this disease, may be breeding in collections of water which need draining, oiling, stocking with fish, or other measures for mosquito control. Control malaria in your community and you may find you have less labor shortage, the physical well-being of your people may show a marked improvement, and your community may enjoy a great economic uplift.—*Pub. Health Rep.*, April 25, 1919.

EARLY FUNCTION AFTER WAR WOUNDS OF THE EXTREMITIES *

GEORGE W. HAWLEY, M.D.
NEW YORK

In injury or disease of the extremities, surgery is dealing with a motor. When a man injures an arm or a leg, what he is chiefly concerned about is the restoration of that motor to its previous functional capacity, or as near the original as possible. The patient is not interested in the methods employed, but in the recovery of a valuable motor. Theoretically, the surgeon is supposed to have the same point of view; but he has devoted more time to the methods of immediate surgical relief, and has not been thinking always in the terms of motor function. This is quite natural, because in surgery of the head and trunk the services of the surgeon are usually at an end after the completion of the operation. After the wound has healed he is more or less powerless in his attempts to exercise control over the function of the deep-seated, stationary, internal organs.

The conditions are very different in surgery of the motor-skeleton, where skeletal, joint and muscle function are so much under the direct control of the surgeon, and where delay, neglect, and failure in the after-treatment count for so much in the ultimate result. Just as the delay in hours in beginning motion after orthrotomy for septic arthritis by the Willems method means so much for the success or failure of the treatment, so also does delay often affect other injuries of the limbs. Instead of the labors of the surgeon being chiefly operative, they involve exacting and time-consuming service outside of the operating room.

It is not too much of an exaggeration to say that there has been little comprehensive effort up to the present time to salvage the potential cripple. What has been done to limit the disability in unavoidable deformities and to prevent unnecessary disability in avoidable deformities? Who will venture an estimate of the number of avoidable deformities among the 700,000 war cripples in France, or among the army of industrial cripples produced in this country every year?

In civil surgery it is still more or less the custom to treat a fracture as a broken bone, and not as a motor with a broken part. It is not uncommon in many excellent hospitals for much, if not all, of the treatment in these cases to be carried on by members of the junior staff. The interest of the surgeons and all concerned is frequently limited to the early immediate surgical treatment, and, as every one knows, many patients are sent to their homes to work out their own salvation as best they may. In civil surgery there has been no real compulsion to obtain complete and early recovery in extremity injuries. No agency exists to compel the profession, the hospitals or industry to effect an intelligent salvage of the potential cripple.

In this respect, civil surgery has much to learn from military surgery. Theoretically, in military surgery the army organization demands that the wounded or injured soldier be treated primarily with the object that he be returned to active military duty in the shortest time, or eventually discharged with the least degree of permanent disability. Unfortunately, however, no machinery existed in the military service to accomplish what military necessity required, and none had been developed in civil practice. It was necessary to create the organization and develop the technic of execution. Such an organization was created in the United States Army, and the process of fitting it into the general scheme has been in operation during the past year.

While the problem of the restoration of the function of the damaged motor-skeleton is not a new one, no one has fully understood the importance of early motion, or the evil results of delay. In civil practice, nearly every one has been more or less conscious of the unfortunate results of failure to begin motion early, and every one is familiar with the convalescent stiff joint; but only among war cripples can one appreciate the appalling results of neglect, in wounds not only of the bones and joints, but also of the soft parts.

To Depage is due the credit for demonstrating the value of early active motion in the treatment of war wounds, and to Willems for his mobilization treatment of joints. To those who have had occasion to observe and direct the efforts to reestablish early function in recent wounds of the extremities, it is no exaggeration to say that the results have been, on the whole, little short of marvelous; but much has yet to be learned and a great deal of care must be exercised in the application of motion to recent injuries of the motor-skeleton.

ABSTRACT OF DISCUSSION

DR. WILLIAM W. PLUMMER, Buffalo: The subject of Dr. Hawley's presentation reduces itself practically to agreement and confirmation. In the matter of after-results from the secondary closures, the results as shown by him are obvious; and those who had the opportunity to be at General Hospital No. 9 last summer and see some of this work know that there is no short cut to happiness in the matter of getting such results. What impressed itself on me was the necessity for close study of detail in the treatment of these cases. Any of the results obtained in any of the hospitals in France, if comparable to these, were only attained after the case had been carefully and industriously followed by the men in charge of the various wards; and with all the advantages of the various treatments that we found useful and standardized, it boils itself down to the man doing the work. There was opportunity to see, a short time ago, in sharp contrast, a large group of men undergoing physical therapy in which this group was being developed by the purely mechanical method of supervised passive exercise, and another group in which the men were doing the exercise, as the British say, "on their own." There was no comparison in the results. Those that were supervised were getting good results quickly; and the others, who were depending on apparatus and that sort of thing, were not.

DR. JOEL GOLDTHWAIT, Boston: One or two points should be remembered in the treatment of these badly infected wounds and in the use of the Carrel-Dakin method of treatment. Without any question, it is the best method of sterilization for septic wounds, provided that the technic can be carried out satisfactorily. There is, however, a difference of only 0.5 per cent. between the strength that possibly gives a harmful effect and that of an inert solution; and any so-called solutions of this kind that are stable are undesirable, because it is the instability of the solution and the rapid giving off of chlorin that make it desirable. In the military stress at the front, you cannot often get the technic demanded, and if you cannot, do not fuss with this method. Give it up and use a dressing made of plain yellow soap and water, which is practical and scientific, and is one of the best dressings for septic wounds that you can put on, if you cannot con-

* Read before the Section on Orthopedic Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

trol the Carrel-Daken technic. In the British hospitals, in 1918, where they could not control the Carrel-Dakin standard dressing, they used a solution of yellow soap on the wound. It did not dry, and harmful organisms cannot grow in a strongly alkaline solution. The mucus will be softened, and will come off easily; and such a dressing can be put on in the field. Other solutions can be used in the same way. Another point: In the latter part of these infections, the sepsis is chronic; we used to call it chronic pyemia; and in the lists of our battle casualties for the last six months, almost all the seriously sick had chronic pyemia, which means that the temperature ran up within a day or two, and an abscess formed in some part of the body. When this condition declares itself, the abscess is inert and practically sterile. All that you need to do, then, is to put the knife in and drain it. You do not need to use the surgical solution of chlorinated soda. Those who are old enough to know about surgery in pre-antiseptic days will remember that the things we have seen in France are exactly the things that we saw in those days.

Dr. Reginald H. Sayre, New York: I have found that a combination pulley by which the patient can pull on a chain and raise himself, when immobilized and suspended in bed, is handier and more useful than the ordinary compound pulley with a rope which has to be belayed. He can pull himself up and down, and by means of the sprocket which articulates with the chain, fix himself in any position desired.

Dr. Willis C. Campbell, Memphis, Tenn.: I should like to ask Dr. Hawley whether he has had any experience with gonorrheal arthritis or other types of acute infectious arthritis treated by the mobilization method.

Dr. H. Winnett Orr, Lincoln, Neb.: No discussion of this subject should be considered complete until a word of caution has been given regarding the danger of rendering apparatus ineffective by attempting to provide motional treatment. It works out in a great many cases that attempts to provide knee or elbow motion render the apparatus ineffective between the times when the motion is given. Apparatus for fixation and traction must be kept in position during the entire time of treatment, if results are to be obtained from its use.

Dr. Joseph Byrne, New York: I have always admired the enthusiasm of the orthopedists in the problem of restoration of function, and for many years have collaborated in this neurosurgical orthopedic work with Drs. Alfred S. Taylor and Samuel W. Boorstein. Secondary suture and early restoration bear an intimate and essential relation to the mechanism of degeneration and regeneration not only of nerve trunks, but also of the finer nerve branches supplying the injured parts. Integrated function of all kinds has a close dependence on the integrity of the neural arcs, both afferent and efferent, as well as on their related correlating and coordinating mechanisms. Hence, what takes place within the neural mechanisms during the stages of degeneration and regeneration after nerve injuries is of vital importance. After injury of a nerve the related neuron bodies in the dorsal root ganglions may undergo complete degeneration or merely exhibit axonal reaction phenomena. In the latter case, function is suspended temporarily in the related axons for a period of from fourteen to twenty-one days, and for a much longer period where infection complicates the injury. It is obvious, therefore, that where infection is present, as in war injuries it usually is, no benefit is to be gained by primary suture, as nerve regeneration cannot take place until after the tissues have become sterilized. Connective tissue, however, forms much more readily in the presence of a waning infection and offers an impenetrable barrier to the axon branches when these begin to sprout from the central segment. Where, however, a period is allowed to elapse after sterilization of the wound, the neuron bodies take on hypermetabolic activity, which aids remarkably the outgrowth of the new axon branches after a secondary operation. Add to this the preparation already completed in the distal segments of the injured nerves by the formation of the tubulized protoplasmic bands for the reception of the outgrowing axon branches, and the conditions are ideal for rapid neural restoration after a secondary operation. Where very small nerve branches have been torn across, in infected or sterile tissues, early movement of the parts aids greatly regeneration in the torn nerve by breaking up the connective tissue barriers, thereby throwing the connective tissue itself into an embryonal state which favors penetration by the axons.

Dr. George W. Hawley, Bridgeport, Conn.: I should like to emphasize a point brought out by Dr. Orr, that of the extreme care that must be exercised when using motion, early motion, in injuries of the extremities. It is really a new field, and we have a great deal to learn yet. It is a matter, largely, of combining effective fixation with motion. In answer to Dr. Campbell's question, unfortunately we had very little experience in the treatment of infected joints. For some reason we had comparatively few joint wounds; so I really can say very little, almost nothing, regarding the mobilization treatment as applied to the arthritis of the type that we see in civil practice. The next few years will present to us the problem of trying to adapt the best that war surgery has developed during the last four years, especially to the treatment of injuries of the extremities.

RESULTS IN THE MODERN TREATMENT OF DIABETES*

HENRY RAWLE GEYELIN, M.D.
NEW YORK

It seems appropriate at this time, after four years or more of trial, to review the therapeutic results that have been obtained with the Allen treatment for diabetes, which has received such universal adoption by the medical profession. With this in view I am going to discuss certain aspects of the treatment of diabetes, and with the help of charts illustrate some of the results obtained during the past four years, during which time we have treated patients according to the general principles laid down by Dr. Allen.

It is not necessary to go into a detailed description of the modern treatment, as it has received a great deal of attention in medical literature during the past four years and the reader, doubtless, is familiar with it. I have been much impressed, however, by the fact that, while many practitioners who have employed the fasting treatment have quite generally appreciated the use of the preliminary fasting period to abolish glycosuria and acidosis, they have not fully appreciated the great importance of the subsequent method of regulating the diet and the importance of keeping the patient free from sugar and ketone bodies. Probably the most important feature of the after fasting treatment is the proper regulation of the relative proportions in the amount of protein, carbohydrate and fat in the diet and the appropriate distribution of half days and fast days. Under the older methods of treatment it was the common practice to keep the carbohydrate intake very low and make up for its absence by feeding large amounts of protein and fat, particularly fat. The object was to keep up the patient's nutrition and body weight. How injurious to the diabetic process the high fat feeding can be has been well shown by Allen on dogs, and can be readily demonstrated in our diabetic patients.

The high fat feeding of former years has probably led to more fatal outcomes in diabetes than any other one factor. This has been so forcibly impressed on me in the past four years that I am inclined to say that

* Read before the Section on Pharmacology and Therapeutics at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

coma may be averted in almost all our cases, even in the presence of infections, provided the fat of the food is kept at the proper level, or in extreme instances totally eliminated. One reason that it has taken so long to recognize the harmful effects of diets overbalanced in fat has been the fact that the effects are very insidious. For example, a patient may be put on a diet very high in fat and very low in carbohydrate and remain sugar and ketone free for a long period of

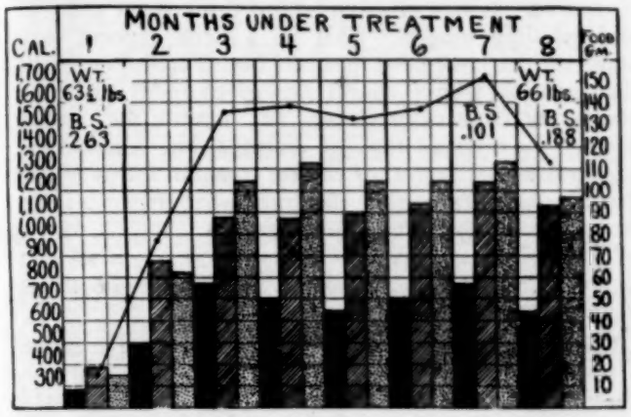


Chart 1.—Course of diabetes in Case 1. In this and the following charts, the numbers on the extreme left border indicate the number of calories. The numbers on the extreme right border represent the grams of food. The numbers at the top of the charts indicate the months during which the patient has been under treatment. The three columns in each numbered space represent the average daily intakes of food; in grams reading from left to right they are: carbohydrate, protein and fat. In Charts 3, 4 and 6 the figures 1=3, 3=4 at the top represent three-month periods. The continuous and irregularly horizontal lines running across the charts represent the total caloric intake .The body weights are indicated by "Wt." The blood sugar values are indicated by "B. S," and are given in percentage amounts.

time; but without further change in the food, the time invariably comes, if the fat in the diet is high enough, when the blood sugar begins to rise and the blood carbonate begins to fall, then sugar and ketone bodies in steadily increasing amounts make their appearance in the urine. With this as a rule go all the subjective symptoms of mild acidosis. The danger of acidosis is not the only one, for there is also the difficulty of reestablishing the food tolerance and rid-

RESULTS OF OLD AND NEW METHODS OF TREATMENT

	Year	Cases No.	Deaths No.	Deaths %	Deaths in Coma No.	Deaths in Coma %	Dish Sugar Free No.	Dish Sugar Free %	Dish Ketone Free No.	Dish Ketone Free %
Old Method	1912	24	6	25.0	4	66.6	3	12.5	12	50.0
	1913	37	5	13.5	4	80.0	18	48.6	23	62.1
	1914	39	7	17.9	5	71.4	16	41.0	13	33.3
	1915	24	9	37.5	5	55.5	13	53.0	11	45.8
	Total	124	27	21.7	18	66.6	50	36.8	59	47.6
New Method	1915	19	1	5.0	0	0.0	16	93.5	14	73.6
	1916	71	8	11.2	2	25.0	58	81.6	57	81.0
	1917	90	11	12.0	3	27.2	78	86.4	60	66.6
	1918	95	12	12.6	3	25.0	82	88.1	70	73.0
	Total	275	32	11.6	8	25.0	234	85.0	207	75.3

ding the patient of his subjective symptoms, which in severe cases takes several months at a much lower caloric level.

In order to demonstrate in a general way the favorable results of the modern treatment (they are not all favorable) I have prepared the accompanying table, which offers a rather striking comparison between the results obtained with the new and old methods of treatment.

This table shows in the second column to the left the total number of diabetic patients treated in the Presbyterian Hospital during the years 1912 to 1918, inclusive. During 1912, 1913 and 1914 all the cases were treated by the old method of treatment. During 1915 most of the cases were treated by the old method, but some were treated by the modern treatment, as shown. From 1916 to 1919 all patients received the newer treatment.

It will be noticed, first, that the number of patients treated by the modern method in three and one-half years is more than double that treated by the older method over a similar period of time, owing largely to the fact that it became known that the hospital was studying diabetes. In spite of the greatly increased number of patients, who were equally divided between the medical and the surgical wards, the mortality percentage (Column 4) has been notably diminished. It will also be noted that there are proportionately fewer deaths from coma during the past three and one-half years. This, I think, is due to the early withdrawal of fat from the diet on admission to the hospital, and the institution of fasting treatment.

Probably the most striking feature of this comparison is the great increase in the number of patients discharged free from sugar and ketone bodies. Except for the patients that died, there were only six patients out of ninety-five in 1918 discharged with sugar (and this was only in traces). These patients who were discharged sugar free derived more benefit from their hospital stay than did those in preceding years, because in addition to being sugar and acetone free and being on a properly balanced diet, all whose intelligence permitted received instruction in calculation of their diets and the use of Benedict's solution in testing for the presence of sugar in the urine. They were thus able to control their condition in a much better manner.

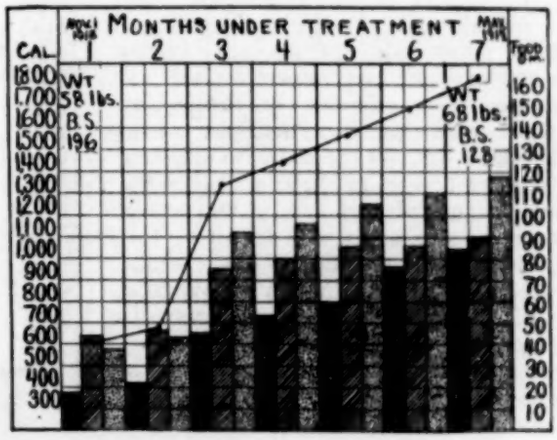


Chart 2.—Course of diabetes in Case 2.

The comparison between the old and new methods of treatment is just as striking in the subsequent care of these patients outside the hospital. It used to be the aim in the dispensary to keep the glycosuria as low as possible; but always from 80 to 90 per cent. of the patients who returned for their dispensary visits showed traces of sugar or more, whereas under present day care less than 40 per cent. return for their regular visits showing sugar in the urine. It is not possible in this paper to take up a more detailed and statistical comparison of the old and new methods of treatment

as they apply to the dispensary care, but later on I shall show charts of patients originally treated in the hospital whose subsequent course has been carefully followed and controlled outside the hospital.

The table does not demonstrate one other advantage that has been very noticeable in the new method of

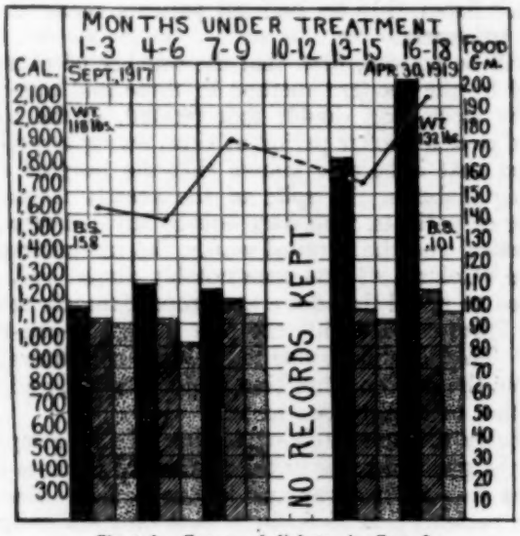


Chart 3.—Course of diabetes in Case 3.

treatment, namely, its effect on surgical conditions in association with diabetes. In cases of gangrene, carbuncles and other local infections, the results of combined medical and surgical treatment with its effect on the saving of life and preservation of limbs have been very much better than with the previous method of treatment; in fact, many operative procedures which were done hitherto have been rendered unnecessary.

As I indicated earlier in the paper, the most difficult part of the treatment for both the patient and the physician comes after the original fast, which we will assume has been effective in eliminating glycosuria and controlling acidosis.

The next step is gradually to increase the food until traces of sugar appear in the urine. A fast, or half day, is then given to eliminate glycosuria, and following this the patient is put on a slightly lower intake of carbohydrate, protein and fat, various ones of all these foods being gradually increased until a definite tolerance is determined. The manner of increasing the various foods, that is, carbohydrate, protein and fat, varies considerably with the type of case and also, to some extent, with the personal judgment of the physician. In a general way we aim to reach:

1. A much higher allowance of carbohydrate than was customary under the older methods of treatment. (It is astonishing at times to see how much more carbohydrate may be tolerated when we adopt the general policy of keeping the fats low.)
2. An allowance of fat ranging from 130 to 180 gm., depending on the patient's tolerance (it may be much lower).
3. A protein intake of about 1½ to 2 gm. per kilogram of body weight.

The urine must be kept free from sugar and ketone bodies, while the blood carbonates and blood sugar (fasting value) should be maintained at the normal or nearly normal level.

Half days or fast days, depending on the severity of the case, are given when sugar appears, and additional half days or fast days are given at regular intervals with the purpose of increasing further tolerance. If with this system of treatment we also obtain faithful cooperation of the patient in following his diet and testing the urine daily, together with timely observations of the blood sugar, improvement unquestionably occurs for periods of from one to three years at least, and possibly longer. This in a very general way sums up the treatment that has been carried out with the patients whose charts are given. All of these charts are from cases chosen, not because the patient showed an unusual type of diabetes, but because the case was rather typical of certain common forms of the disease and because they illustrate what treatment can or cannot accomplish in these groups.

Charts 1, 2 and 3 represent the course of diabetes in a certain group of young people. All of these patients have done well.

Case 1.—A boy, aged 12, had shown sugar for one month previous to going under treatment. The onset had been sudden and the symptoms were severe. The day he appeared for treatment he was distinctly drowsy, the skin was very dry, and he was breathing deeply. It required four fast days to make him sugar free, and his average daily food intake for the first month was very low, a little over 300 calories. His food tolerance could not be raised above this level. For the next seven months his food was steadily increased until 1,700 calories were reached. This was obviously too much for him at this time, and the more frequent fast days and slightly lower regular diet that was instituted lowered his average daily calories for the eighth month, which was May, 1919. So far in June his diet has averaged 1,400 calories daily and I think will be maintained

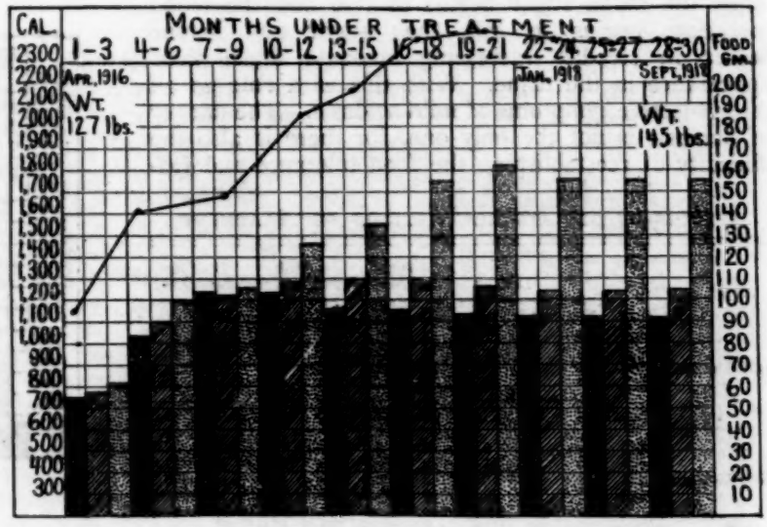


Chart 4.—Course of diabetes in Case 4.

at this point for from two to four weeks with the hope of gradual increase. He has not lost weight in this time but feels well, is quite active, perhaps too much so, and leads a normal life except as regards his diet.

Case 2.—A girl, aged 11, had had diabetes for two months before coming under observation. Her history was essentially the same as the boy's and it took three fast days to rid her of sugar. She has had half days every two weeks and has shown sugar only twice in seven months. This child has shown a steady gain in tolerance, her present diet being

85 gm. of carbohydrate, 90 gm. of protein and 120 gm. of fat. and is one of five very favorable cases of children seen in the past four years. It is, of course, impossible to say what her prognosis is, but it would be more favorable than that of the preceding case.

CASE 3.—A man, aged 23, has been under treatment since September, 1917. Sugar was first discovered in a life insurance examination. For two months previous to institution of treatment, he had followed a diet spasmodically. Glycosuria was eliminated in one fast day and the food was increased within six days to 60 gm. of carbohydrate, 90 gm. of protein and 70 gm. of fat, which produced glycosuria in considerable amounts. Chart 3 shows the subsequent course of events. This patient has been very faithful and has followed his diet religiously and very accurately, weighing all of his food for a long time; and when he became very proficient at this he began estimating the amounts of food, controlling this at intervals by periods of two to three weeks in which he weighed all the food. He has shown definite traces of sugar from time to time in daily tests, but has always been able to clear up the sugar by reducing his carbohydrate only. The patient has had almost no half days or fast days. He has been able to gain his normal weight and do a full day's work as electrical engineer. His blood sugar begins to rise as soon as he raises his carbohydrate intake above 250 gm. or if he stays on a daily intake of 250 gm. for more than one week.

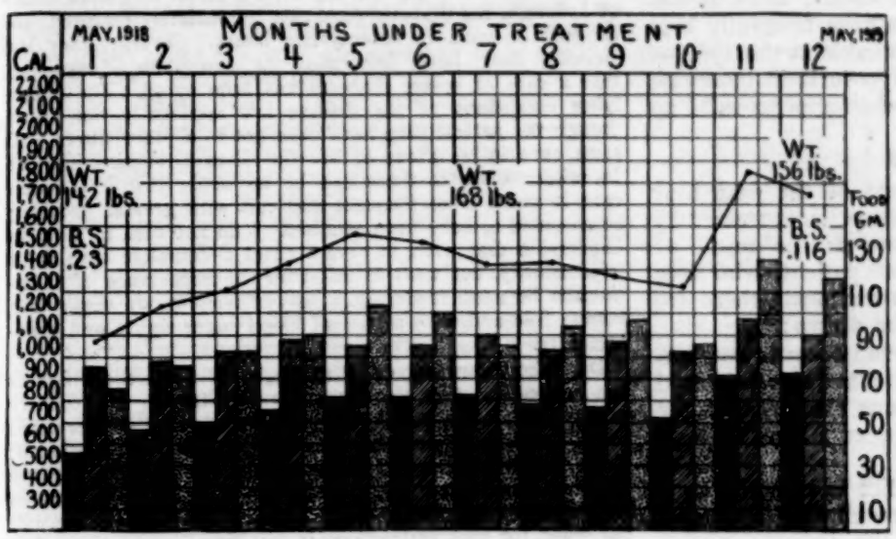


Chart 5.—Course of diabetes in Case 5.

Charts 4 and 5 are those of older patients who have done well. They have increased their food tolerance, and have gained in weight. Both were originally fairly severe cases, particularly Case 4.

CASE 4.—A man, aged 57, first came under treatment in April, 1915. He was showing much sugar and large amounts of diacetic acid in the urine. He was also suffering from very painful neuritis in both of his legs, which kept him awake at night. He had had diabetes for five years and had been on a very high fat diet with moderate restriction of carbohydrates but had never been sugar free. It took six fast days to render him sugar free, and for six weeks it was impossible to raise his tolerance above 900 calories, in spite of a very restricted intake of fat. He continued to have pains in the legs and show traces of diacetic acid in the urine. Fast days were liberally distributed throughout this entire period. It was not until his tolerance had been raised to about 1,600 or 1,800 calories that the pains and diacetic acid began to disappear.

This patient illustrates very aptly the fact previously referred to, namely, the bad effect produced by long continued diets too high in fat. How difficult it was, how long it took to develop a food tolerance, and how permanent this tolerance has been since 1916 is well shown in Chart 4. Unfortunately, the tolerance acquired by many similar patients is not so high as in the case of this man.

CASE 5.—A man, aged 47, had had diabetes for one year previous to his first visit. Sugar had always been present in large amounts and he had lost 80 pounds. He was so weak he could hardly walk and had been very drowsy and nauseated at times. He also had a very high fat intake; but his carbohydrate intake had been well over 100 gm., as the result of a generous allowance of gluten bread. It took three fast days to make him sugar free. The upward trend in this case has been somewhat interrupted twice, but he has gained in weight, is able to do a full day's work, and shows a normal amount of blood sugar.

I do not wish to give the impression that all cases of diabetes at this or at any other age show such favorable and encouraging progress; but of those who follow treatment day in and day out with the care that these patients have, it is very unusual for them to do badly and show a progressive down hill course.

Among older people, that is, those over 30 years of age, I have seen very few patients with uncomplicated diabetes who have followed strict treatment go steadily down hill. This does not mean that many diabetics of this age have not shown downward progress, for many have; but with the exception of the few cases just mentioned, they have all flagrantly violated their dietary regimen. It has been considered almost axiomatic that diabetes in the young is fatal. That such may not always be the case is suggested by some of the results just cited. But for a certain group of diabetics more often encountered in the young than in the old, there is no doubt that an inherent tendency to a downward course does exist and persists until death, in spite of any treatment. Such a case is Case 6.

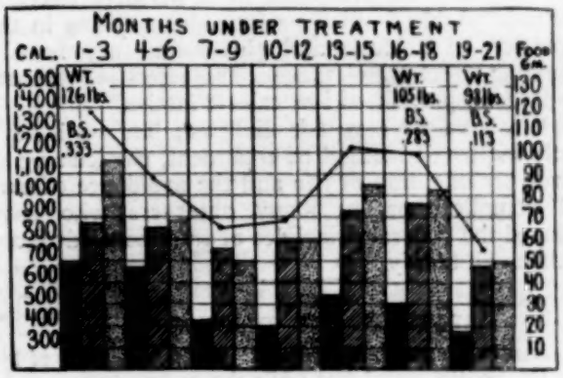


Chart 6.—Course of diabetes in Case 6.

CASE 6.—A woman, aged 23, had had diabetes for one year. It has never been difficult to clear up glycosuria by fast or half days, but this patient has always shown a tendency to

develop high blood sugar on even a very low food intake. Now after almost two years of faithful adherence to diet, with many changes in the relations between carbohydrate, protein and fat, she has gradually lost tolerance. There has been a loss of 28 pounds in weight, and there can be no doubt that she is slowly and steadily losing ground. Her present tolerance may be noted on chart.

There have been several other similar cases at this age; but only two of the patients have faithfully kept the diet. It would seem most advisable in this type of case to feed the patient, allow glycosuria in moderate amounts to continue, and make an attempt to build up the strength.

CONCLUSIONS

As the result of the experience of the past four years in dealing with many diabetic patients treated by the above described methods, and as the result of reviewing complete records of these patients who have been cared for under the modern treatment, there are certain inevitable conclusions to be drawn:

1. Diabetes in its severe and acute form is not limited to the first three decades of life, but may be found at any age, although rare in persons over 30. In my experience it is more common between 50 and 70 than between 30 and 50.

2. Absolute adherence to the diet is essential to a maximum degree of successful results in treatment. Without there is no hope unless the diabetes is very mild; and even in that case there is great risk of it becoming severe.

3. Fast days and half days are of great help in treatment of the majority of patients, but are not necessary as routine measures in all cases at all times.

4. It is wise for a patient under treatment to realize that he is not a normal person on a normal diet and to regulate his mental and physical activities, and, therefore, his caloric output, by his caloric intake.

5. Exercise should be advised only in exceptional cases and in proportion to the amount of energy afforded by the caloric intake. Rest rather than exercise should be urged.

6. Long continued diets overbalanced in fat (180 gm. and over) are harmful, and their harmful effect is insidious. Aside from their immediate effects in the production of acidosis and glycosuria, they have a depressing effect on tolerance. This effect is overcome only by long periods of low caloric intake.

7. We have no cure for diabetes; but we have a greatly improved method of treatment, particularly as regards prolongation of life and the avoidance of surgical complications, as many observers who have employed the general principles of treatment advanced by Allen will testify.

ABSTRACT OF DISCUSSION

Dr. Alfred Stengel, Philadelphia: In the beginning of his paper Dr. Geyelin stated that while the modern treatment of diabetes is now quite generally understood, there is a question in the minds of many practitioners regarding the latter part of the treatment, and with many the after-treatment is the most difficult. This has been precisely my experience. Beginning with the same form of treatment in 1915 my results have been substantially the same as his, and the after-treatment of the disease has been that which has given me the most difficulty. I am quite certain that if I had all of my figures here they would show about the same proportion of cases in which the patient was rendered sugar free and ketone free in a relatively short time; but a very considerable number of these cases subsequently relapsed owing to imperfect methods of treatment, failure to carry out instructions and various other causes. I want to point out particularly the difficulty of determining when and whether a case of diabetes is actually cured. One of my most instructive experiences was made in the case of a young man who had been sugar free and ketone free for nearly four years, and for three years had had a normal blood sugar figure despite the fact that he was on quite a substantial general diet. As a result of a mild attack of influenza his diabetic condition immediately relapsed, and he died in coma in seventy-two hours. Several other less striking cases have illustrated the unwisdom of asserting that a case of severe diabetes has been cured. The underlying conditions of the disease are apparently not cured, though the patient may have been got to a place where with some care in his mode of life the disease remains inactive. In milder diabetes there can be no doubt that a complete cure is much more frequent and can with greater propriety be assumed to have been attained. I do not wish to give the impression that even in severe cases a complete cure is an impossibility, but wish to insist on the importance of a distinction between rendering a patient temporarily sugar free, ketone free and with a normal blood sugar figure and absolute cure.

Dr. Jacob Rosenbloom, Pittsburgh: I think these figures are misleading, that there are few hospitals in this country which would allow such a large percentage of the older cases to go out with glycosuria. My difficulty in the adoption of this method in many cases has been that the patients are not intelligent, they will not stick to it, and in many cases they consider themselves too intelligent and tell you "we will not stand for such restrictions in our diets," and I think that the older methods of treatment have still a place. In cases which have to come to operation, in pregnancy and in children, I feel that the Allen treatment is certainly the best to use.

Dr. Philip Roy, Washington, D. C.: This subject is very interesting. I was called to see a gentleman who had lost one leg by gangrene; the other leg was badly swollen; his urine contained 3 per cent. of sugar and it was also filled with casts and albumen. Under the Allen treatment the swollen leg has become better, and he is enjoying good health and attending daily to his business. I have not seen him for a year, but I know that he is perfectly well.

Dr. H. O. Mosenthal, New York: In regard to the after-treatment: The primary treatment is to render the patient sugar free, and whatever method we pursue makes little difference. The big difference of Dr. Allen's treatment from others is that we can render practically every person sugar free. The one problem we have to meet is when we cannot make the person sugar free, and have to restrict the diet in such a way that he cannot obtain enough nourishment to live. The form of diet that we have to give such a person is a mixture of art and routine. Formerly, we gave these people high fats and raised the calories in this way. But now the question of restriction of fats is the best course, and the best service which Allen has given us.

Dr. E. P. Joslin, Boston: Dr. Geyelin's paper gives much encouragement. It is a striking fact that prior to 1915 one quarter of all diabetic patients entering the hospital died, and that since that date the mortality has been reduced to 10 per cent.; that prior to 1915 two thirds of the patients died in coma, and since that date a very small percentage die in coma, e. g., two out of forty. The statistics of the Massachusetts General Hospital showed that between 1898 and 1914 no improvement in diabetic treatment was obtained but since the Allen treatment was introduced marked improvement has taken place.

Dr. L. F. Kebler, Washington, D. C.: I am gratified at the conservatism of Dr. Stengler relative to the curing of diabetes. Cases are reported free of sugar for a time and then relapse. I would like to ask Dr. Geyelin whether the increase from 19 to 95 represents a percentage increase of diabetic conditions or just an increase of cases that came to the hospitals, and if the latter, why did they come to the hospital? Since the enforcement of the food and drugs act we have done a great deal by restricting the statements

appearing on packages, and one disastrous result is that these people have transferred their statements to newspapers. We have a number of cases under consideration now where people are using the mails to treat diabetic cases by means of drugs.

DR. L. G. HEYN, Cincinnati: I had a patient who had been rendered sugar free for some time, and had applied for a life insurance examination. This particular company has a habit of giving all candidates from 100 to 150 gm. of glucose on an empty stomach. He remained sugar free. I think this was a very severe test.

DR. C. M. GRIGSBY, Dallas, Texas: I have never derived as much benefit from any therapeutic measure as I have from Dr. Allen's treatment for diabetes. In the statistics here, however, I wonder whether they are of full value, because in the last four years, we have had cases in the hospitals which were much more amenable to treatment than were those of the older days.

DR. H. RAWLE GEYELIN, New York: The time limit on all papers prevented my emphasizing and illustrating, by means of the charts, certain points concerning the treatment of diabetes. Whether the diabetes be mild or severe the patient should be made to realize that he must regulate his activities according to the amount of food he is able to take and remain sugar free. Mild cases of diabetes, cases that in all probability would always remain mild, may be rendered severe if diets, much overbalanced in fat, be administered over too long a period of time. As regards the glucose tolerance test, it should not be given often in the case of mild diabetes and certainly should not be used in cases of severe diabetes. I consider that the improvement in the treatment of diabetes made in the past five years has been quite remarkable and may yield the most favorable results in some cases. Whether or not diabetes is on the increase, or whether we are discovering it earlier, is a question which requires a thorough study of life insurance and other statistics of similar character before we can arrive at direct conclusions.

THE INFLUENCE OF DESICCATION ON HUMAN NORMAL ISOHEMAGGLUTININS *

HOWARD T. KARSNER, M.D.
AND
HERBERT L. KOECKERT, M.D.
CLEVELAND

The practical importance of human normal isohemagglutinins in determining the suitability of prospective donors for the transfusion of blood has been emphasized many times. The quest for an accurate, rapid and convenient method of determining the compatibility of donor and recipient has led to the development of a large number of methods to supersede the older time-consuming methods described in the various textbooks.[1] The methods of Epstein and Ottenberg[2] and Fishbein,[3] designed to accomplish a large number of tests with a small amount of blood, were simplified first by Weil.[4] Rous and Turner[5] then added the advantage of further blood economy. The time-saving method of Brem[6] was improved on by Moss,[7] but involved the use of washed corpuscles; this was obviated by Minot's modification,[8] which is quite similar to the method of Lee.[9] These were followed by the methods of Coca,[10] Vincent[11] and Abelmann,[12] but the methods as employed by Karsner[13] and Lee[9] in military hospitals testify to their efficiency.

As a further means of saving time and affording greater convenience, Sanford[14] has recommended the use of dried serums. He allowed the serums to dry in air on cover-slips, after which they were wrapped in paper and kept in the icebox. For grouping an unknown blood, the dried drops of serums of Groups II and III were dissolved in one drop of the cell suspension and the grouping made according to the classification of Moss. He observed that the serums still possessed marked agglutinating properties after more than two months. Karsner[15] noticed that in France there seemed to be a deterioration and loss of specificity of the agglutinins a short time after they were dried. It was with this in mind that the following experiments were carried out:

EXPERIMENTS

Serums of Groups II and III were used, and dilutions of 1:2, 1:4, 1:8, 1:16, 1:32 and 1:64 were made with physiologic sodium chlorid solution. Small drops of undiluted serum and of each dilution were allowed to dry on glass slides in the air. The initial agglutinating titer was noted and tests were made at the end of each week for twelve weeks. One third of the slides (A)[16] were kept in the dark at room temperature, another third were kept in the refrigerator (B), and the remainder were kept in a vacuum desiccator over sulphuric acid (C). The corpuscles used were from individuals of Groups II and III, and the same individuals were used throughout the experiment. Further, in order to avoid variations in agglutination due to the quantity of cells used in the tests, a standard cell suspension was used throughout, namely, a suspension made by mixing in 1 c.c. of physiologic sodium chlorid solution the amount of blood which would fill the capillary tube of a white cell counting pipet, and which we have found to be the optimal concentration for isoagglutination tests. Since the erythrocyte count of the individuals used remained practically constant, the resulting cell suspensions were also constant. The dried serum drops were dissolved in a loopful of cell suspension of each group. Since agglutination occurred more slowly in the higher dilutions, as has been observed by Ottenberg, and since, if agglutination occurred in any dilution, it did so within thirty minutes, that time was taken as a standard during which the mixtures were frequently observed microscopically. The slides were kept inverted in a moist chamber during this period, and for observation were placed in the same position on a slide the ends of which were raised by means of two small pieces of glass glued on with balsam, thus affording a very serviceable hanging drop preparation.

At the same time a series of small capillary tubes were drawn out and filled with the various dilutions of both

* Aided by a special grant from Mr. H. G. Dalton.
* From the Department of Pathology, Western Reserve University, School of Medicine.

1. Webster, R. W.: Diagnostic Methods, Ed. 5, Philadelphia, P. Blakiston's Son & Co., 1916, p. 653.
2. Epstein, A. A., and Ottenberg, R.: A Method for Hemolysis and Agglutination Tests, Arch. Int. Med. **3**: 286, 1909.
3. Fishbein, Morris: A Method of Selection of Donor for Blood Transfusion, J. A. M. A. **59**: 793 (Sept. 7) 1912.
4. Weil, Richard: Sodium Citrate in the Transfusion of Blood, J. A. M. A. **64**: 425 (Jan. 30) 1915.
5. Rous, Peyton, and Turner, J. R.: A Rapid and Simple Method of Testing Donors for Transfusion, J. A. M. A. **64**: 1980 (June 12) 1915.
6. Brem, W. V.: Blood Transfusion with Special Reference to Group Tests, J. A. M. A. **67**: 1906 (July 15) 1916.
7. Moss, W. L.: A Simplified Method for Determining the Isoagglutinin Group in the Selection of Donors for Blood Transfusion, J. A. M. A. **68**: 1905 (June 23) 1917.
8. Minot: Boston Med. & Surg. Jour. **172**: 667, 1915.
9. Lee, R. T.: Brit. M. J. **2**: 684 (Nov. 24) 1917.
10. Coca, A. F.: J. Immunology **3**: 93 (March) 1918.
11. Vincent, B.: A Rapid Macroscopic Agglutination Test for Blood Groups, and Its Value for Testing Donors for Transfusion, J. A. M. A. **70**: 1219 (April 27) 1918.
12. Abelmann, H. W.: Surg., Gynec. & Obst. **27**: 88 (July) 1918.
13. Karsner, H. T.: Transfusion with Tested Bloods Including the Grouping of 1,000 Bloods and a Method for Use at Advanced Hospitals, J. A. M. A. **70**: 769 (March 16) 1918.
14. Sanford, A. H.: A Modification of the Moss Method of Determining Isohemagglutination Groups, J. A. M. A. **70**: 1221 (April 27) 1918.
15. Karsner: Personal communication to the authors.
16. See protocols.

serums. These were kept in the refrigerator and used in the same way as the dried serums, paralleling each test exactly in technic (D). Each tube held a drop of moderate size sufficient for making one test. For use, the sealed ends were broken off and the contents expelled on the slide, a most convenient procedure and even more rapid and economical than using serum kept in ampules.

RESULTS

The results, as may be seen in the protocols, showed that deterioration began about the second or third week in the higher dilutions and gradually involved the lower dilutions; that complete deterioration never occurred in the undiluted serum; that after the third to the fifth week there appeared a loss of specificity, each serum agglutinating the corpuscles of both Groups II and III, the loss of specificity occurring first in the undiluted serums and gradually involving the higher dilutions, until at the end of the tenth week, and often as early as the seventh, none of the dilutions were specific for the proper cells. Throughout the experiments the undiluted serums possessed marked agglutinating properties. Curiously enough, it will be observed from the protocols that approximately coincident with the gradual loss of specificity in the higher dilutions, the previously deteriorated dilutions gradually regained their agglutinating power up to the original titer, though without specificity. In no instance was any agglutination observed in dilutions higher than the original titer of the serums. The ocurrence of these changes has not been constant as to time in the various series of experiments carried out, but the protocols will serve as a fair example of the results observed.

In the tubed serums, no deterioration or loss of specificity occurred at any time, even in the case of one

PROTOCOLS *

	Serum	Corpuscles	Dilution	Normal Control	Weeks 1	2	3	4	5	6	7	8	9	10	Serum	Corpuscles	Dilution	Normal Control	Weeks 1	2	3	4	5	6	7	8	9	10	Remarks
A	II	II	1	−	−	−	+	+	+	+	+	+	+	+	III	III	1	−	−	−	+	+	+	+	+	+	+	+	Dried in air. Preserved at room temp.
			2	−	−	−	−	±	+	+	+	+	+	+			2	−	−	−	+	+	+	+	+	+	+	+	
			4	−	−	−	−	−	−	+	+	±	+	+			4	−	−	−	−	−	±	+	+	+	+	+	
			8	−	−	−	−	−	−	−	+	+	+	+			8	−	−	−	−	−	−	−	+	+	+	+	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	−	−	−	+	+	+	+	+			4	+	+	+	+	−	−	+	+	+	+	+	
			8	+	+	+	−	−	−	+	+	+	+	+			8	+	+	+	−	−	−	+	+	+	+	+	
B	II	II	1	−	−	−	−	−	+	+	+	+	+	+	III	III	1	−	−	−	−	−	+	+	+	+	+	+	Dried in air. Preserved in refrigerator
			2	−	−	−	−	−	−	+	+	+	+	+			2	−	−	−	−	−	−	+	+	+	+	+	
			4	−	−	−	−	−	−	−	−	−	+	+			4	−	−	−	−	−	−	−	−	−	+	+	
			8	−	−	−	−	−	−	−	−	−	−	+			8	−	−	−	−	−	−	−	−	−	−	+	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	+	−	−	+	+	+	+	+			4	+	+	−	−	−	+	+	+	+	+	+	
			8	+	+	+	−	−	−	+	+	+	+	+			8	+	−	−	−	−	−	+	+	+	+	+	
C	II	II	1	−	−	−	−	−	+	+	+	+	+	+	III	III	1	−	−	−	−	−	+	+	+	+	+	+	Dried in air. Preserved in desiccator
			2	−	−	−	−	−	−	+	+	+	+	+			2	−	−	−	−	−	−	−	+	+	+	+	
			4	−	−	−	−	−	−	−	−	+	+	+			4	−	−	−	−	−	−	−	−	+	+	+	
			8	−	−	−	−	−	−	−	−	−	−	+			8	−	−	−	−	−	−	−	−	−	−	+	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	−	−	+	+	+	+	+	+			4	+	+	−	−	−	+	+	+	+	+	+	
			8	+	+	−	−	−	+	+	+	+	+	+			8	+	+	−	−	−	−	−	+	+	+	+	
D	II	II	1	−	−	−	−	−	−	−	−	−	−	−	III	III	1	−	−	−	−	−	−	−	−	−	−	−	Tubed
			2	−	−	−	−	−	−	−	−	−	−	−			2	−	−	−	−	−	−	−	−	−	−	−	
			4	−	−	−	−	−	−	−	−	−	−	−			4	−	−	−	−	−	−	−	−	−	−	−	
			8	−	−	−	−	−	−	−	−	−	−	−			8	−	−	−	−	−	−	−	−	−	−	−	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	+	+	+	+	+	+	+	+			4	+	+	+	+	+	+	+	+	+	+	+	
			8	+	+	+	+	+	+	+	+	+	+	+			8	+	+	+	+	+	+	+	+	+	+	+	
E	II	II	1	−	−	−	−	+	+	+	+	+	+	+	III	III	1	−	−	−	−	+	+	+	+	+	+	+	Phenolized (0.5%) Dried in air. Preserved in refrigerator
			2	−	−	−	−	−	+	+	+	+	+	+			2	−	−	−	−	−	+	+	+	+	+	+	
			4	−	−	−	−	−	−	−	−	+	+	+			4	−	−	−	−	−	−	−	+	+	+	+	
			8	−	−	−	−	−	−	−	−	−	−	+			8	−	−	−	−	−	−	−	−	−	−	+	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	−	+	+	+	+	+	+	+			4	+	+	−	−	−	+	+	+	+	+	+	
			8	+	+	−	−	−	+	+	+	+	+	+			8	+	+	−	−	−	−	+	+	+	+	+	
F	II	II	1	−	−	−	−	−	+	+	+	+	+	+	III	III	1	−	−	−	−	+	+	+	+	+	+	+	Frozen, dried, and preserved in desiccator
			2	−	−	−	−	−	−	+	+	+	+	+			2	−	−	−	−	−	+	+	+	+	+	+	
			4	−	−	−	−	−	−	−	+	+	+	+			4	−	−	−	−	−	−	−	+	+	+	+	
			8	−	−	−	−	−	−	−	−	+	+	+			8	−	−	−	−	−	−	−	−	+	+	+	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	−	−	+	+	+	+	+	+			4	+	+	+	+	−	+	+	+	+	+	+	
			8	+	+	−	−	−	−	+	+	+	+	+			8	+	+	+	−	−	−	+	+	+	+	+	
G	II	II	1	−	−	−	+	+	+	+	+	+	+	+	III	III	1	−	−	−	+	+	+	+	+	+	+	+	Dialyzed, dried in air. Preserved in refrigerator
			2	−	−	−	−	±	+	+	+	+	+	+			2	−	−	−	−	−	+	+	+	+	+	+	
			4	−	−	−	−	−	±	+	+	+	+	+			4	−	−	−	−	−	±	+	+	+	+	+	
			8	−	−	−	−	−	−	+	+	+	+	+			8	−	−	−	−	−	−	+	+	+	+	+	
		III	1	+	+	+	+	+	+	+	+	+	+	+		II	1	+	+	+	+	+	+	+	+	+	+	+	
			2	+	+	+	+	+	+	+	+	+	+	+			2	+	+	+	+	+	+	+	+	+	+	+	
			4	+	+	+	−	−	−	+	+	+	+	+			4	+	+	+	+	−	+	+	+	+	+	+	
			8	+	+	+	−	−	−	+	+	+	+	+			8	+	+	+	−	−	−	+	+	+	+	+	

* Figures in the dilution column represent dilutions of serum in physiologic sodium chlorid solution, 1, 1:2, 1:4 and 1:8. No agglutination occurred with dilutions higher than 1:8. The agglutination of corpuscles of Groups I and IV, which occurred in all dilutions of both Serums II and III in every series after prolonged drying, is not indicated. The sign + indicates agglutination; − indicates no agglutination; ± indicates tendency to agglutination.

series which remained at room temperature for more than three months.

In another series, phenol (0.5 per cent.) was used as a preservative, after which the drops were made and dried in air and kept in the refrigerator. The results observed by the usual weekly tests were the same as with the other dried serums (E).

EFFECT OF THOROUGH DRYING

The question of the thoroughness of the drying then presented itself. Shackell and Harris[17] have pointed out that deterioration of the virus of rabies in dried cord is due to imperfect methods of drying and the exposure to air, the atmospheric moisture of which is sufficient to dissolve the salts in a very concentrated form in a few hours and so destroy the virus.

Accordingly, the method of desiccation worked out by Shackell,[18] which he states "could be used for the absolute preservation of immune serums as well as the concentration of low potency toxins," and which has been employed by Achalme and Phisalix[19] in the "preservation of vaccine virus in hot countries," and applied by Hitchens and Hansen[20] to the preservation of typhoid vaccine and by Hammer[21] to the preservation of various bacteria, was followed in another series of experiments, and careful attention was paid to the details of technic as suggested by Shackell. A well-made vacuum desiccator with smooth ground glass surfaces and tightly fitting stopcock was placed in a salt and ice freezing mixture. When the maximum cold was reached (—10 C.) the slides were prepared, placed in the desiccator and frozen as rapidly as possible. The desiccator was exhausted by means of an ordinary water pump which was able to exhaust from 20 to 30 mm. of mercury, and the freezing, which occurred very quickly, maintained for twenty-four hours. The desiccator was exhausted and the sulphuric acid shaken up every day in an effort to assure as complete dryness as possible. These serums were used in exactly the same manner as the other dried specimens with apparently no difference in the results obtained, except a slight retardation of one or two weeks in the onset of deterioration and loss of specificity (F).

In another series the serums and various dilutions were dialyzed in parchment dialyzers for seventy-two hours before drying in order to eliminate the salts, the concentration of which might be the cause of the observed changes; the usual qualitative chlorid test, silver nitrate and potassium bichromate, was taken as an indication of salt content and found to be negative. The slides were then prepared, dried in air and kept in the refrigerator. The results obtained by the regular weekly tests were quite similar to those previously noted in the other dried serums (G).

Various serums which had dried in the flasks in which they were kept failed to show this loss of specificity. Why this was the case when a large amount of serum was allowed to dry as contrasted with the results obtained by drying small drops has not been determined; but this work is being carried on to determine, if possible, the factor or factors concerned, including the influence of bulk; this, however, has usually been found to hasten rather than retard deterioration.[22].

A further interesting observation was made when suspension of corpuscles of Groups I and IV were used. Here again agglutination of those cells occurred in all dilutions. These tests were made after the eighth week, when the loss of specificity had been observed in all of the dilutions; but there is no doubt that agglutination of the normally unagglutinable corpuscles of Group IV would have been observed as soon as loss of specificity was noticed had the tests been made then. This agglutination of corpuscles of all the groups by each of several serums which belonged originally to Groups II and III emphasizes the agglutinative power of serum to be of vastly more importance in the process of agglutination than the agglutinability of the cells, and refutes the assumption of specific iso-agglutinophilic substances.

Hartman[23] has suggested, as a convenient method of grouping bloods, the use of serums dried on filter paper. This procedure was also carried out with serums of Groups II and III, the drying being done in air and the papers kept at room temperature. Proper agglutination occurred only with those papers which had been saturated with undiluted serum or the 1:2 dilution, and in these instances agglutination was never as marked as was seen regularly with the tubed serums or even with those dried on slides. Loss of specificity occurred occasionally, but it was often impossible to determine accurately whether or not such slight agglutination occurred because of the considerable amount of dirt and débris which constantly occurred and which, per se, frequently caused clumping of the corpuscles and greatly interfered with the accurate observation of such slight agglutination as frequently occurred. Regardless of the factors of deterioration and loss of specificity, this, together with the objections of loss of time in dissolving the serum and the inconvenience compared to the use of tubed serums, is sufficient reason to discard the method.

We also found it impossible, even with rapidly dried serum, to redissolve all the material by adding the amount of distilled water or physiologic sodium chlorid solution necessary to restore the original volume, and there was usually a reduction in the agglutinating titer of such redissolved serums. A Group III serum, which originally agglutinated in a 1:16 dilution, agglutinated only up to 1:2 when redissolved, and then only very weakly, whereas the original undried serum still maintained the original titer.

Any attempt to explain the deterioration and loss of specificity of iso-agglutinins at the present time could not be anything more than a speculation. The exact cause of the phenomenon of agglutination or adequate explanation of the specific character of iso-agglutinins for specific groups of cells has not been determined, and until the accurate conception of this phenomenon is advanced and accepted, it would be folly to attempt an interpretation of the changes that have been observed. The diminution in agglutinating power of isohemagglutinins in dried serum similar to that in heated agglutinating serum may find analogy in the deterioration of bacterial agglutinins that have been preserved at room temperature.

17. Shackell, L. F., and Harris, D. L.: J. Am. Pub. Health Assn. **1**: 52, 1911; J. Infect. Dis. **8**: 47, 1911.
18. Shackell, L. F.: Am. J. Physiol. **23**: 325, 1909.
19. Achalme and Phisalix: Lancet **2**: 1027, 1911.
20. Hitchens and Hansen: Jour. Am. Pub. Health Assn., **3**: 175, 1913.
21. Hammer, B. W.: J. M. Res. **24**: 527, 1911.

22. See references 15 and 16.
23. Hartman, I. W.: New Methods for Blood Transfusion and Serum Therapy, J. A. M. A. **71**: 1658 (Nov. 16) 1918.

The explanation of the loss of specificity is baffling, for it is a phenomenon previously unobserved in antibodies. Doubtless, the answer lies within the field of colloidal chemistry, and its determination would seem to offer a considerable opportunity for investigation into the physicochemical changes occurring in dried serums due to various influences, including among others, age, alterations in hydrogen ion concentration, in electrical conductivity and in the dispersion of agglutinating substances, and the presence of otherwise feeble but nonspecific "para-agglutinins." It has been considered sufficient at present to have established the facts and to present these observations concerning isohemagglutination.

CONCLUSIONS

1. Normal human iso-agglutinins exhibit deterioration within from two to three weeks and loss of group specificity within from three to five weeks after drying, regardless of the method of desiccation employed or the previous addition of a preservative or the elimination of salts by dialysis.

2. Complete loss of specificity with coincident acquisition of nonspecific agglutinating power occurs within from seven to ten weeks after desiccation.

3. The agglutination of corpuscles of all groups by a serum that has lost its specificity for particular groups emphasizes the agglutinative power of serum to be far more important in the mechanism of agglutination than the agglutinability of the corpuscles, and refutes the assumption of specific iso-agglutinophilic substances.

4. There is a considerable reduction in the agglutinin titer by the redissolving of dried serum in enough distilled water or physiologic sodium chlorid solution to restore the original volume.

5. The use of undried serum, put up in small capillary tubes, is a most convenient, rapid and economical, as well as accurate, method for grouping blood.

A NEWLY RECOGNIZED CAUSE OF PULMONARY DISEASE—ASCARIS LUMBRICOIDES *

B. H. RANSOM

Chief, Zoological Division, United States Bureau of Animal Industry

WASHINGTON, D. C.

It has long been known that the common roundworm of man (*Ascaris lumbricoides*) and the closely related and probably identical parasite of the pig (*Ascaris suum*) sometimes occur aberrantly in organs other than the small intestine, their usual location. Until the recent investigations of Stewart,[1] however, the fact that *Ascaris* is regularly parasitic in the lungs during an early stage of its development was not even suspected. Stewart's experiments have been repeated by Yoshida[2] and by Foster and myself,[3] and Stewart's important discovery that the larvae of *Ascaris*, after hatching in the intestine of an animal that swallows the eggs, migrate to the lungs and then return to the intestine, has been fully confirmed. With reference to the rat and mouse theory, however, Foster and I have reached conclusions that are not in accord with Stewart's view that rats and mice may serve as intermediate hosts of *Ascaris*. Contrary to this view we have clearly shown that no intermediate host is necessary, and that infection of man or pig occurs as a result of swallowing the eggs of the parasite.

Briefly, the course of development is as follows: The eggs pass out of the intestine of an infested animal (man or pig) in the feces. The eggs are not infective until the contained embryos develop to a vermiform stage, which requires a period of two weeks or more, according to the temperature of the surrounding medium, oxygen supply, and moisture. Accidentally the embryos may hatch outside the body; but in this case they quickly perish. Within the highly impermeable egg shell, however, the fully developed embryo is very resistant to cold, dryness and other unfavorable conditions, and may remain alive for long periods of time, five years and possibly longer. If swallowed by some mammal, the eggs that contain fully developed embryos hatch in the small intestine. They will also hatch if artificially introduced beneath the skin.

Unless accidentally carried out of the body in the feces, the newly hatched larvae leave the lumen of the intestine and migrate to the liver, though some possibly go more directly to the heart, in both cases apparently aided by the circulation. From the liver, where they remain in most cases only a few days, they migrate to the lungs, evidently by way of the hepatic veins, inferior vena cava, heart and pulmonary arteries. They are stopped in the lungs by the capillaries, enter the air vesicles and bronchioles, pass up the bronchi and trachea, then into the esophagus, and finally reach the small intestine, where, if the animal infested is a suitable host, they establish themselves and continue their development to maturity. Occasionally some of the larvae appear to return to the heart from the lungs, as they may sometimes be found in the spleen, under the peritoneum of the abdominal cavity, and in other locations that they could scarcely reach except in the systemic circulation. In such locations they may attain the same stage of development that is reached by those in the lungs, but it seems unlikely that they can succeed in regaining the intestine or in continuing their development.

In rats, mice, guinea-pigs and rabbits, *Ascaris* larvae undergo the same migrations that they do in the pig and presumably in man, the only essential difference being that when they return to the alimentary tract after passing through the liver and lungs, they are unable to develop further and soon pass out of the body in the feces. The larvae thus eliminated in the feces are only slightly resistant to unfavorable conditions and die in a short time. The possibility of their being ingested by and continuing their development in a human being or pig after passing through a rat or mouse is of theoretical interest but seems to be of no

* Read before the Section on Pathology and Physiology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Stewart, F. H.: On the Life History of Ascaris Lumbricoides, Brit. M. J. **2**: 5-7 (July 1) 1916; The Life-History of Ascaris Lumbricoides ibid. **2**: 474 (Sept. 30) 1916; Further Experiments on Ascaris Infection, ibid. **2**: 486-488 (Oct. 7) 1916; On the Life History of Ascaris Lumbricoides, ibid. **2**: 753-754 (Dec. 2) 1916; On the Development of Ascaris Lumbricoides Lin. and Ascaris suilla Duj. in the Rat and Mouse, Parasitol. **9**: 213-227 (Feb.) 1917; Note on Ascaris Infection in Man, the Pig, Rat and Mouse, Indian M. Gaz. **52**: 272-273 (Aug.) 1917; The Life-History of Ascaris Lumbricoides, ibid. **52**: 379-380 (Oct.) 1917; On the Development of Ascaris Lumbricoides and A. Mystax in the Mouse, Part 2 Parasitol. **10**: 189-196 (Jan.) 1918; On the Life History of Ascaris Lumbricoides, ibid. **10**: 197-205 (Jan.) 1918; Recent Experiments on the Life History of Ascaris Lumbricoides, Brit. M. J. **1**: 102 (Jan. 25) 1919.

2. Yoshida, Sadao: On the Development of Ascaris Lumbricoides, J. Parasitol. **5**: 105 (March) 1919.

3. Ransom, B. H., and Foster, W. D.: Life History of Ascaris Lumbricoides and Related Forms, J. Agric. Res., Dept. Agric. **11**: 395-398 (Nov. 19) 1917; Recent Discoveries Concerning the Life History of Ascaris Lumbricoides (authors' abstract), Anat. Rec. **15**: 341-342 (Jan. 20) 1919; Recent Discoveries Concerning the Life History of Ascaris Lumbricoides, J. Parasitol. **5**: 93-99 (March) 1919.

practical importance. As shown by Foster and myself, very young sheep and goats are better adapted as hosts for *Ascaris* than rats, mice, guinea-pigs or rabbits, since the larvae after their passage through the lungs may establish themselves in the intestine and develop to a stage approaching maturity, though they seem unable to reach their full growth as they do in man or pig.

In experimentally infected animals (rats, guinea-pigs, etc.), *Ascaris* larvae may be found in the liver as early as two days, in the lungs and trachea as early as three days, and in the intestine following their passage through the lungs, as early as six days after the eggs are swallowed. They are common in the lungs from seven to ten days after infection, becoming scarce in the liver as they become numerous in the lungs, and can be found passing down the esophagus in large numbers from eight to ten days after infection. During their migrations before returning to the intestine they increase in size from a length of about 0.25 mm. when newly hatched to a length of as much as 2.5 mm., commonly 1.5 mm. At the same time they undergo considerable change in structure, and molt at least twice. In the case of rats, mice, and other animals in whose intestines the parasites are unable to establish themselves, the larvae are all, or practically all, eliminated within a little over two weeks after infection. In closing this brief outline of the life history of *Ascaris* it may be of interest to note that if fully incubated eggs are injected beneath the skin of a guinea-pig they not only hatch as first shown by Martin,[4] who did not, however, follow the migrations of the larvae, but the larvae later appear in the lungs, just as they do when the eggs are swallowed.[5]

The fact that *Ascaris* in the course of its development regularly passes through the liver and lungs naturally raises the question as to the damage it may do during its migrations. Evidently it has capacities for harm not suspected so long as it was assumed, as formerly, that after hatching from the egg, the young worm simply settles down in the intestine and grows to maturity. Just how important it may be under natural conditions as a cause of disease of the liver, lungs or other organs that are invaded by the migrating larvae remains to be determined. Under experimental conditions, however, it has been found that the migrating larvae may seriously injure the lungs. As first observed by Stewart, experimentally infected rats and mice commonly die of pneumonia a week to ten days after infection, and the same is true of guinea-pigs and rabbits. Larger animals, such as young pigs, if heavily infested, may likewise succumb to pneumonia incident to the invasion of the lungs by the larvae; and even when a comparatively few eggs have been swallowed, more or less definite symptoms of pulmonary trouble, such as difficult and quickened respiration and fever, may commonly be noted about a week after infection. The symptoms of a disease known as "thumps," which is highly destructive to young pigs, are similar to those shown by pigs suffering from *Ascaris* pneumonia experimentally produced. Indeed, it is quite certain that in many of the cases of "thumps" *Ascaris* is an important etiologic factor, and evidence recently collected in field investigations shows very clearly that *Ascaris* pneumonia is responsible for much of the loss of life and stunting of growth that occur among young pigs.

By analogy it is reasonable to suppose that *Ascaris* may occasionally if not frequently be involved in the production of pulmonary disease among human beings, especially young children. Young children are known to be more susceptible to infection with *Ascaris* than older persons, just as young pigs are more susceptible than older pigs; and it may be presumed that they resemble young pigs also in being more liable to suffer from *Ascaris* pneumonia than older persons.

As a matter of fact, certain observations are on record that are at least in harmony with the supposition that in human beings, as well as in various other animals in which the fact has been proved by experiment, *Ascaris* larvae may be a source of injury to the lungs. Over fifty years ago a German physician, Mosler,[6] fed *Ascaris* eggs in numbers as large as several dozen to healthy children of various ages. In no instance did the children afterward pass worms following anthelmintic treatment, and the experiment thus gave negative results so far as concerned the development of the worms from the eggs. In some cases, however, Mosler observed that the children a few days after the eggs were given to them suffered from fever and difficulty in breathing. He was inclined to doubt that these symptoms were caused by the experiment. In the light of our present knowledge, however, it is altogether likely that the symptoms in question were produced by an invasion of the lungs by *Ascaris* larvae.

Another experiment on man is recorded in the literature in which the ingestion of *Ascaris* eggs was followed by pulmonary symptoms. This experiment was carried out by Lutz[7] in South America, the subject being a grown person who volunteered for the experiment. Incidentally it may be remarked that Lutz's experiment stands in agreeable contrast to Mosler's, which, in the use of children as experiment animals, is quite indefensible from a moral standpoint.

Lutz's volunteer was 32 years old and was stated to have been absolutely free from *Ascaris* infestation for at least twenty years, living in circumstances and amid surroundings and with personal habits such that there was little likelihood of infection from sources outside the experiment. During the experiment, special care was taken to avoid conditions usually considered favorable to parasitic infection. A small number of *Ascaris* eggs were swallowed on a number of different days, namely, January 4, 5, 6, 7, 19, 23, 25 and 27, the average number of eggs per day being estimated at twelve, only about a third of which contained fully developed embryos. Altogether, therefore, about 100 viable eggs were swallowed, fifty in the early part of the month and fifty in the latter part of the month. Early in the experiment the subject suffered from acid dyspepsia, repeated vomiting, and a slight remittent fever, in addition to which an unusually severe bronchitis soon developed. These symptoms were gradually replaced by symptoms of an intestinal catarrh. The early symptoms were considered probably accidental by Lutz; but the persistent abdominal symptoms seemed to indicate a positive result from the experiment, and the patient accordingly was given an anthelmintic treatment, February 1. From the feces following this treatment, thirty-five immature ascarids from 5.5 to 13 mm. long were recovered.

Assuming that these worms came from the eggs fed in the early part of January, it is of interest to note

4. Martin, André: Recherches sur les conditions du dévelopement embryonnaire des nématodes parasites, Ann. d. sc. nat., Paris, zool., year 87, Series 9, **18** (1-2): 1-151, 1913.

5. Ransom, B. H., and Foster, W. D. (Footnote 3), second and third references).

6. Mosler, quoted by Leuckart, Rudolph: Die menschlichen Parasiten und die von ihnen herrührenden Krankheiten: Ein Hand- und Lehrbuch für Naturforscher und Aerzte, Leipzig and Heidelberg, **2**: 222-223, 1867.

7. Lutz, Adolph: Zur Frage der Uebertragung des menschlichen Spulwurms: Weitere Mittheilungen, Centralbl. f. Bakteriol. **3**: 425-428, 1888.

that their size from twenty-five to twenty-eight days after infection corresponds closely to that of the worms found in the small intestine of a young goat twenty-seven days after it had been fed *Ascaris* eggs in an experiment carried out by Foster and myself, the length of the worms in the latter instance varying from 4.3 to 11.4 mm., averaging 7.9 mm. (twenty-nine worms measured out of several thousand present). There is thus practically complete agreement in the size to which the worms developed in the same length of time in the two experiments.

As to the significance of the early symptoms noted by Lutz as well as those observed by Mosler a few days after the ingestion of *Ascaris* eggs by human beings, it is quite possible that they were merely coincidental; but it seems much more likely that they were the result of the invasion of the lungs by the young parasites. Whether or not any importance is ascribed to the lung symptoms observed by Mosler and Lutz, the fact that *Ascaris* larvae can cause pneumonia in lower animals clearly indicates that they may do likewise in human beings. This possibility should receive serious consideration by those who have opportunity for its investigation, particularly in cases of pulmonary troubles among young children who are living amid surroundings favorable to gross infection with *Ascaris*.

SUMMARY

To recapitulate, some of the more important facts that have been established by recent investigations on *Ascaris lumbricoides* and conclusions to be drawn from them may be thus summarized:

Infection occurs as the result of swallowing eggs of the parasite containing fully developed embryos, no intermediate host being necessary.

After the young worms hatch in the intestine they do not immediately settle down, but migrate to the liver, lungs and other organs, meanwhile undergoing considerable growth and development.

Those that reach the lungs return to the intestine by way of the trachea and esophagus, then settle down and develop to maturity if in a suitable host (man, pig); otherwise they are soon eliminated in the feces (rat, mouse, guinea-pig, rabbit), or in some hosts (sheep, goat) may undergo an abortive development that falls short of fertile maturity.

Pneumonia commonly occurs in experimentally infected animals about a week to ten days after infection, at a time when the invasion of the lungs by the migrating larvae is at its height.

Mosler in 1867 and Lutz in 1888 recorded the occurrence of pulmonary symptoms in human beings following the experimental administration of *Ascaris* eggs. In the light of our present knowledge it is very probable that these symptoms were the result of invasion of the lungs by migrating *Ascaris* larvae.

The question of the occurrence of pulmonary troubles in human beings as a result of *Ascaris* infection should receive careful investigation, especially in the case of young children.

ABSTRACT OF DISCUSSION

Dr. Theo Zbinden, Toledo, Ohio: I was recently interested in a case in which the diagnosis was made of foreign body in the lung. Dr. Hubbard made two bronchoscopic examinations and found nothing. The roentgen ray showed nothing. The patient's symptoms would last a few hours or a day or two, and then disappear. However, a few weeks after the last attack the child passed a full sized ascaris worm. I would like to know whether the adult worm could have caused these symptoms by passing upward into the esophagus, and obstructing the larynx, or whether a number of larvae were passing out of the trachea. According to Dr. Ransom's description the larvae are very small and not likely to cause symptoms of obstruction.

Dr. Henry Albert, Iowa City, Iowa: Dr. Ransom referred to a condition in young pigs called "thumps." I would like to ask him if an investigation has been made regarding the relationship of worms to thumps. It is a common disease and it seems to me that the opportunity for making such an investigation should be easy to find. It is also a common observation among farmers that coughing is one of the usual symptoms of worms in hogs. I presume that there is a direct relationship between such and the irritation caused by the larval form of the ascaris in the lungs. I would like to ask Dr. Ransom if postmortem examinations of the animals have been made and if so what were the findings.

Dr. C. C. Bass, New Orleans, La.: These observations have opened a future that we do not at the present fully estimate. When we recall the very widespread prevalence of this disease in man, especially in institutions, such as orphan homes, and among the poorer class of people, we can begin to appreciate the importance of this observation. Do the larvae which attack the lung damage it in the same way that the hookworm larvae do? If we infect animals experimentally with a small number of hookworm larvae, many small hemorrhages occur in the lung. Of course, if many worms are present, then massive hemorrhages occur and these may get large enough to kill the experimental animal in two or three hours.

Dr. B. H. Ransom, Washington, D. C.: As to Dr. Zbinden's question: I think in that case it was merely a matter of the aberrant wandering of a well developed or mature ascaris. Ascarids have the habit of crowding into narrow passages, into the bile ducts or pancreatic ducts, and cases are on record in which they have been found wandering in the esophagus, eustachian tubes, and in various other places outside of their normal location. As to the question of "thumps" in pigs, we have investigations under way, the results of which are not yet available. These investigations are being carried out in the Middle West and we hope to have some definite results from this season's work. Referring to Dr. Bass's question as to how the ascaris larvae injure the lungs, that matter is still under investigation, but they do very much as hookworm larvae do, produce minute hemorrhages. It is very characteristic in the case of experimental animals that have been infected with ascaris to find small petechiae scattered over the lungs and in some cases there are large hemorrhagic areas either as a result of a heavier infection or of other conditions that we do not exactly understand. The other question asked by Dr. Bass was in reference to age susceptibility. In the case of human beings, it is quite evident that children, because of their habits, are, perhaps, more exposed to infection than older persons, but I do not see how that explanation could be sufficient in the case of pigs, because as far as my observations have gone, adult pigs are likely to be just as much exposed to infection as younger pigs, and in fact their exposure is probably greater from the simple fact that they are older and have consequently had more opportunities to become infected. As a matter of fact the statistics we have gathered show that young pigs are more often and more heavily infected than older animals. I don't see any way of explaining the difference in the case of pigs except on the basis of the difference in age susceptibility.

Treatment of Mental Disorders.—The problem of mental disorders as now understood is no longer properly formulated by the phrase "the care of the insane." Mental disorders of many forms and in many stages are extremely prevalent. Those regarded as insane are simply the cases whose capacity for adjustment to the requirements of organized society has failed to such degree that they have become a burden or a menace.—W. L. Russell, *Canadian J. Mental Hygiene* **1**:162 (July) 1919.

DESENSITIZATION OF PERSONS AGAINST IVY POISON

JAY FRANK SCHAMBERG, M.D.

PHILADELPHIA

In an informal discussion[1] of a paper at the Detroit session in 1916, I announced that I had been able to protect persons susceptible to attacks of ivy poison by the internal administration of minute but increasing doses of the tincture of *Rhus toxicodendron*. Later my assistant, Dr. Strickler, made an alcoholic extract of the plant, which after aqueous dilution was injected subcutaneously and was found to be effective in preventing attacks.

During the past few years I have been employing this method in my private practice, with uniform success. I have treated almost a score of susceptible persons, and all have remained free of dermatitis during the ivy season, whereas prior to undergoing this treatment they rarely escaped.

I may briefly mention the case of a 12-year-old girl who for several years had spent a couple of months in bed each year from severe and repeated attacks of dermatitis venenata. She was so susceptible that she could not traverse a lane where ivy grew without being attacked. After taking the treatment she was rendered immune except for an extremely slight attack which developed as a result of her purposely handling the ivy plant to test her resistance.

The method of treatment which I have been carrying out is as follows: I prescribe:

		C.c.
℞	Tincture of rhus toxicodendron	1
	Rectified spirit	5
	Syrup of orange, sufficient to make	100

The patient is instructed to take the mixture in half a glass of water after meals, as follows:

Breakfast, Drops	Lunch, Drops	Dinner, Drops
1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21

When this dosage has been reached, for purposes of convenience and simplicity, the patient takes a *teaspoonful* in half a glass of water merely *once a day*. This should be continued throughout the ivy season.

It has been my experience that the immunity (if one call it such) established after one month's administration will persist for about a month afterward. After this, susceptibility is prone to return.

TREATMENT OF AN ATTACK OF IVY POISON

The same mixture appears to exert a favorable influence on attacks of ivy poisoning in preventing an extension of the process, and in abbreviating the duration of the attack. In order to bring the patient more quickly under the influence of the drug, I administer it as follows:

Breakfast, Drops	Lunch, Drops	Dinner, Drops
2	4	6
8	10	12
14	16	18

Teaspoonful once a day, well diluted.

It is, of course, necessary to establish the fact that the ivy has been the cause of the dermatitis. *Rhus toxicodendron* tincture would probably be of no value in treating poison oak, primrose or other forms of plant poisoning. I think it is more than likely, however, that desensitization against these poisonous plants could be accomplished by using extracts of *Rhus diversiloba*, *Primula obconica*, etc., in the same manner as detailed above.

The results obtained by this method in fortifying the resistance of persons against ivy poison suggest the possibility of achieving similar results against various pollen catarrhs—hay fever, rose cold, etc. If one can incriminate the particular pollen at fault, an extract taken by mouth might conceivably bring about a desensitization. This method is so much simpler than administration by hypodermic injection that it would appear to me to be worthy of trial.

1922 Spruce Street.

1. Schamberg, J. F., in Discussion on Eczema, J. A. M. A. **68**: 87 (Jan. 13) 1917.

Therapeutics

A DEPARTMENT DEVOTED TO THE IMPROVEMENT OF THERAPY. A FORUM FOR THE DISCUSSION OF THE USE OF DRUGS AND OTHER REMEDIES IN THE TREATMENT OF DISEASE.

RESULTS IN THERAPEUTICS

Therapeutic truths not only deserve reiteration—they demand it. To determine what is the truth is most difficult, especially in therapeutics. Unfortunately, much of what passes as therapeutic knowledge is merely tradition or opinion; too much of our therapeutics is based on opinion. A fact is characterized by constancy, and constancy of results is what we need, above all, in therapeutics. Much of our treatment is not constantly successful because based on incomplete observation, on mere opinion. A definition for "constancy of results," as used here, might be called for. Of course, we cannot expect 100 per cent. results in therapeutics. The reason for this is the complexity and variability of the conditions to be met. The human body is not a test tube. We often cannot fathom all the factors at work. Hence it may easily occur that we employ our therapeutic reagents in conditions under which the desired result cannot happen. The more clearly and closely we draw the therapeutic indications, and the more accurately we adapt our technic to meet the requirements of the particular case at hand, the more nearly will our results approach the ideal of 100 per cent. However, to save ourselves disappointment, it is almost as important to know under what conditions our remedies must fail, as it is to know when they may be expected to succeed.

USE AND ABUSE OF CATHARTICS

The following is the first of a series of articles on pharmacology, physiology and practical application of the common laxatives and cathartics.

The physician who knows when to employ a cathartic has mastered an important lesson in therapeutics. In these days of revolution and reform, nothing is too well established to be questioned, too sacred for attack. The dictum, "Qui bene purgat, bene curat," shall give way to the maxim, "The less purging, the better."

CATHARSIS A CAUSE OF CONSTIPATION

That cathartics are a frequent cause of constipation may be gathered from such utterances as these:

In my opinion one of the most common sources of constipation in this country is the pernicious habit of resorting to

the use of drugs to secure a daily stool. . . . If we except England, there is no other country in which chronic costiveness is so prevalent as it is here; and it is equally true that in no other land do people so frequently resort to the indiscriminate and senseless use of medicine in order to move the bowels. . . . It is a lamentable fact that not a few parents have the insane idea that, if they do not administer a cathartic frequently to their children, dire results will follow; and in their anxiety they eventually bring about or aggravate the very condition which they wish to avoid, namely constipation.[1]

A. C. Adams[2] would go so far as to prohibit the giving of cathartics to children, excepting under medical supervision. He urges that the medical profession attack the advertisements and display of aperients as inimical to the public health. With this we fully agree. The philosophy underlying the admission of cathartics into the advertising pages of newspapers and lay periodicals that discriminate against other forms of "patent medicines" displays the unfortunate lay notion that cathartics can do no harm. In point of fact, cathartics are not only habit-producing drugs; but, as in certain cases of intestinal obstruction, they may even kill.

However, while entering on such a campaign, let us be sure that our own hands are clean. A cathartic prescribed by a physician is no less liable to produce the cathartic habit—a habit that means increasing ill health—than one taken by the patient on his own initiative. Indeed, when the physician prescribes the remedy, the patient feels all the more certain that it is good for him, and he is likely to continue taking it. After all, the medical practice of the laity reflects the past practice of the medical profession.

Cathartics produce constipation in several ways: Excessive evacuation does not leave enough residue to excite bowel movement the next day. The patient, believing or instructed that he ought to have a daily bowel movement, repeats the dose; and he is well started on the way to a drug habit. For now fatigue of the musculature from overstimulation, or muscular spasm from abnormal irritability of the mucosa, due to excessive irritation, are likely to assert themselves, leading to the necessity of progressive increase in dosage and potency of the drug. Even the mildest and blandest laxatives, as well as enemas, must be charged with a tendency to get the bowel into sluggish habits, for the very ease with which soft or liquid contents pass along the large bowel diminishes the necessity for muscular effort, and leads to atony and ultimate atrophy.

THE ACATHARTIC TREATMENT OF CONSTIPATION

In an extensive clinical study of constipation, Thayson[3] arrives at the conclusion that habitual constipation, as distinguished from secondary or symptomatic constipation, can be cured without the use of cathartics. This form of constipation usually begins before the age of 26 in women and 31 in men. The constipation beginning after these ages is generally secondary to some other disturbance. While he considers an atonic condition of the intestine, frequently hereditary, to be the predisposing cause in habitual constipation, yet he believes that acathartic treatment should be resorted to in such cases, and that such treatment is generally successful. By going to stool at a regular time each day, regardless of whether there is a desire or not, and devoting fifteen minutes to an effort to have a passage, natural movements can usually be secured by the third or fourth day. Now, if this can be done in middle life at a time when the constipation has become a habit of many years' standing, how much easier should it be to cultivate a correct habit in a little child, even though it had a hereditary tendency to constipation.

The psychotherapy of constipation, in which Paul Dubois[4] has been one of the most prominent pioneers, consists in implanting in the patient's mind the conviction that constipation is merely a faulty habit that can be overcome by proper hygiene and diet and without recourse to evacuants or enemas, and in antagonizing the fear that attempts at defecation will prove ineffectual. Frantic straining at stool may actually inhibit the process. Of course, before resorting to psychotherapy, we should first convince ourselves and, what is quite as important, the patient, by means of physical, roentgenographic and sigmoidoscopic examination that no organic disease of the bowel exists.

The psychic treatment is accompanied by correction of sins against hygiene. It is evident that those whose diet is at fault need diet and not drugs. The constipation of those with sedentary habits requires exercise—perhaps only calisthenics, walking, etc.—while those whose nervous system is below par from excessive work and worry need rest and recreation to enable the intestine to resume its proper function.

A word of warning should accompany even this treatment. The patient should be told that, if he does not succeed in obtaining a daily movement, it does not matter. We must not permit the patient to make of his bowel a fetish for daily and devoted worship. Says Samuel Jones Gee:[5]

> Many of those who are continually complaining of constipation are suffering more from fear and hypochondria than from anything else. It is no law of nature that the bowels should be relieved punctually once in twenty-four hours. Some persons feel in better health when the bowels act once in two or three days; free evacuations are followed by a sense of weakness. Patience and contentment with nature's operations are not the worst remedies for constipation.

While this may be true of the adult, it must be admitted that it is probably just as undesirable for an infant to go for several days without an evacuation as it is to get it started on the cathartic habit. If the bowel is permitted to retain fecal matter for a long time, the rectal reflex becomes chronically dull.[6] To prevent this, when the infant's bowels have not moved for more than twenty-four hours, a soap suppository or a simple glass rod suitably bent as suggested by Eggleston,[7] may be used. Of course, modifications of the diet, and giving an infant opportunity for exercise, are the chief measures to be employed in developing regularity of bowel movement in infants.

1. Gant, S. G.: Constipation, Obstipation and Intestinal Stasis, Philadelphia, W. B. Saunders, 1916, p. 69.
2. Adams, A. C.: The Cause and Cure of Constipation, Brit. M. J. **2**: 315 (Sept. 21) 1918.
3. Thayson, T. E. H.: Bidrag til den Kroniske Habituelle Obstipations Klinic og Rontgenologi, Ugesk. f. Læger **81**: 4, 37, 91 (Jan. 2, 9, 16) 1919.
4. Dubois, Paul: The Psychic Treatment of Nervous Disorders, New York, Funk and Wagnalls Company, 1906.
5. Gee, S. J.: Medical Lectures and Aphorisms, New York, Oxford University Press, 1908, p. 271.
6. Sutherland, G. A.: Constipation in Children, Latham and English System of Treatment, **2**: 432.
7. Eggleston, Carey: Simple Appliance for Training Infants to Stool, J. A. M. A. **70**: 156 (Jan. 19) 1918.

SPASTIC CONSTIPATION

In spastic constipation, cathartics, excepting the blandest of laxatives, such as oils, are contraindicated. When the patient suffers from colic—with or without meteorism—when he has a feeling as though the evacuations were unsatisfactory, when he presses a good deal at stool and evacuates long, thin, flattened fecal masses (though they may have other shapes) and when, on palpation of the abdomen, one can roll colonic segments under the hand like cords, and on rectal examination the bowel fits closely around the finger like the finger of a glove, cathartics not only are useless but they aggravate the disturbance. In these cases, antispasmodic treatment is indicated.

PELVIRECTAL CONSTIPATION

In pelvirectal constipation (Hertz's[8] dyschezia), recognized by the fact that on roentgenologic examination the upper portions of the colon are emptied in the proper time, while the bismuth is retained for days in the sigmoid flexure and rectum, purgatives are likewise not only useless, but harmful, as they can act only when fluid stools are produced, which at one and the same time wastes nutriment and leads to intestinal atony. It is characteristic for this condition that enemas act much better in producing evacuation than do physics given by mouth, a fact of which some of these patients are well aware. Here the most important part of the treatment is to keep the rectum and pelvic colon empty, so that these may in time regain their normal tone and irritability. This can be accomplished by the regular use of enemas or of suppositories. Increasing the irritability of the rectal mucosa by the use of appropriate irritants is also likely to have a curative tendency.

Bent glass rod to serve as substitute for suppository treatment.

REMOVAL OF IMPACTED FECES

For the removal of impacted feces enemas rather than purgatives should be used. The latter merely add to the colic which is usually present and which indicates that the intestinal musculature is already contracting excessively.

(To be continued)

8. Hertz, A. F.: Constipation and Allied Intestinal Disorders, London, 1909.

Passage of Human Infections.—When the people generally and preachers, editorial writers and other teachers understand that human diseases are spread almost entirely from one human victim to another, it will be possible to focus attention on the main avenues of passage and control them. Until they do, we shall continue to be ineffective in controlling infectious diseases. In looking to all possible trails and ignoring the main ones, we are about as efficient as a young, untrained hunting dog which tries to divide his attention on a dozen tracks at the same time. Like him, we shall continue to run our legs off and finally lie down, confused and entirelly satisfied that the thing "just can't be done."—*Milwaukee Health Bulletin 281.*

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

HIRATHIOL—Ammonium Sulphoichthyolicum.—An aqueous solution of a synthetic product, the important medicinal constituents of which are ammonium compounds containing sulphur in the form of sulphonates, sulphones and sulphides.

Actions and Uses.—See sulphoichthyolate preparations (New and Nonofficial Remedies, 1919, p. 319). It is claimed that hirathiol is equivalent in every respect to the original ichthyol.

Dosage.—Since this article is claimed to be closely similar to ichthyol, its dosage is probably like that of the older preparation (see New and Nonofficial Remedies, 1918, p. 160).

Manufactured by Hirasawa Chemical Industrial Company, Tokyo, Japan (Takamine Laboratory, Inc., Clifton, N. J., U. S. selling agents). No U. S. patent. No U. S. trademark.

Hirathiol is a brownish-black syrupy liquid, having a characteristic empyreumatic odor.

It is soluble in water, glycerin and alcohol. It is miscible with fats.

The aqueous solution of hirathiol (1:10) is faintly acid to blue litmus. The aqueous solution (1:20) yields a greenish-black, resin-like precipitate upon the addition of hydrochloric acid. This precipitate is soluble in ether; it is also soluble in water, but if dissolved in the latter solvent, it is again precipitated by the addition of hydrochloric acid or sodium chloride test solution.

Boil an aqueous solution of hirathiol (1:10) with potassium hydroxide test solution. Ammonia is evolved.

Hirathiol loses 46.5 per cent. of its weight when dried at 100 C.

Weigh from 5 to 6 Gm. of hirathiol into a flask, and 25 Cc. of potassium hydroxide test solution and 100 Cc. of water. Distil the mixture until no more ammonia passes over, collect the distillate in 15 Cc. of normal sulphuric acid, to which 1 drop of methyl orange test solution has been added, and titrate the excess of acid with tenth-normal potassium hydroxide. The amount of normal sulphuric acid consumed corresponds to 3.18 per cent. of total ammonia (NH_3).

Weigh from 5 to 6 Gm. of hirathiol into a beaker, add 50 Cc. of water and 10 Cc. of a 10 per cent. solution of albumen, followed by 5 portions of 5 Cc. each of diluted hydrochloric acid, shaking after each addition. Make up the mixture to a volume of 500 Cc. and filter through a dry filter. Heat 200 Cc. of the filtrate to boiling, add 10 Cc. of barium chloride test solution and allow the mixture to stand for twenty-four hours. Collect the precipitate of barium sulphate, heat and weigh. The weight of barium sulphate obtained corresponds to 6.16 per cent. of ammonium sulphate.

Weigh from 0.5 to 1 Gm. of hirathiol into a Kjeldahl flask, add 30 Cc. of water and 5 Gm. of potassium chlorate followed by 30 Cc. of nitric acid, and evaporate the mixture to about 5 Cc.; add 25 Cc. of hydrochloric acid and evaporate to 5 Cc.; again add 25 Cc. of hydrochloric acid and evaporate to 5 Cc. Then add 100 Cc. of water, heat to boiling and add 10 Cc. of barium chloride test solution, allow the mixture to stand for twenty-four hours, collect the precipitate of barium sulphate, heat and weigh. The weight of barium sulphate corresponds to 10.23 per cent. of total sulphur.

Calculate the ammonia obtained in the ammonium sulphate, as previously determined in hirathiol, and subtract the result from "total ammonia" as previously determined. Multiply the remainder by the factor 1.88. The result represents the sulphur present as "sulphonic sulphur." Calculate the sulphur contained in the ammonium sulphate as previously determined in hirathiol, and subtract the result from "total sulphur" as previously determined. The remainder (8.74 per cent.) represents the sulphur present in the organic, sulphonic acids contained in the substance. Subtract the "sulphonic sulphur," as previously calculated, from the sulphur in the organic acids, as previously calculated. The remainder corresponds to 5.73 per cent. of organic ("sulphide") sulphur.

Hirathiol is incompatible with acids, saline solutions, and fixed alkalis.

MEDICINAL FOODS (see New and Nonofficial Remedies, 1919, p. 165).

SOY BEAN GRUEL FLOUR.—A flour prepared from the soy bean having approximately the following composition: protein, 44; fat, 20; sucrose, 10; ash, 4.3; fiber, 2; water, 4.6.

Actions and Uses.—Soy bean gruel flour may be used for preparing muffins. It is indicated in cases in which a diet relatively free from carbohydrates is desired, as in diabetes, amylaceous dyspepsia, etc. It has also been suggested for use in the diet in obesity. The nutritive value of 500 Gm. of this flour corresponds approximately to 2,027 calories, of which 902 calories are due to protein, 205 calories to carbohydrate, and 920 calories to fat.

Manufactured by the Cereo Company, Tappan, N. Y. No U. S. patent or trademark.

Soy bean gruel flour is made from soy bean with the removal of as much of the hull as is practicable.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - - Chicago, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading matter

SATURDAY, OCTOBER 18, 1919

THE LACTOSE CONTENT OF HUMAN MILK

Investigators of the alimentary disturbances of infants cannot succeed completely in interpreting their problems until they know something about the comparative composition of the intake of food and of the output of fecal residues in the cases with which they are concerned. Regarding cow's milk and the various feeding mixtures that have been concocted for pediatric practice, it is not difficult to secure dependable information. Such foods for the period of infancy have become standardized, so to speak, with the result that the physician who has occasion either to prescribe them or to judge of some result attributable to the ration used can gain a fairly accurate estimate of their food values in terms of the proximate principles.

The composition of human milk has heretofore not seemed to be equally certain. Enough analyses have been reported to show an unexpectedly large range of variation for fat and also some for protein. Although the average fat content of breast milk approximates from 3 to 4 per cent., maxima and minima of 9 per cent. and 1.5 per cent., respectively, have been recorded by dependable analysts. Talbot[1] reported that the percentage of fat depends more on how completely the breasts are drained and the amount of late milk which gets into the sample than on the stage of lactation. This illustrates the analytic difficulties involved in the study of the composition of human milk, and consequently the uncertainty as to the responsible factor to which digestive disturbances following the use of this food may be chargeable.

Until recently these uncertainties of composition have, perhaps, been greater in respect to the sugar in milk than for any other familiar component, owing to the unsatisfactory methods of analysis in vogue. At the Harvard Medical School and the Massachusetts General Hospital in Boston, Denis and Talbot[2] have secured enough dependable data to establish certain fundamental facts as to lactose in human milk. The average amount of milk sugar in sixty samples was 7.2 per cent., with a general tendency for the content to increase throughout the period of lactation. It has long been known that the amount of lactose is low in colostrum; but the relative fixity of the higher figures in the later milk have not been so well realized. In the Boston samples, during the first ten weeks of lactation, two thirds of the specimens contained less than 7 per cent. lactose; whereas after the tenth week there were four times as many samples which contained between 7 and 8 per cent. as there were samples that contained less than 7 per cent., and many others which contained more than 8 per cent. of lactose. Since the weakest milk in these numerous samples, after the colostrum period, contained 5.5 per cent. of lactose, and the richest 8.35 per cent., the contrast between human milk and cow's milk in respect to their sugar content becomes emphasized once more. The sugar in cow's milk rarely exceeds 5 per cent.

1. Talbot, F. B.: Lactose, Fat and Protein Content of Woman's Milk, J. A. M. A. **73**: 138 (July 12) 1919.
2. Denis, W., and Talbot, F. B.: A Study of the Lactose, Fat and Protein Content of Woman's Milk, Am. J. Dis. Child. **18**: 93 (Aug.) 1919.

THE FACTORS INVOLVED IN CYANOSIS

Like several other signs of deviation from the normal, cyanosis has long been a familiar symptom meriting recognition from the physician, notably in diseases of the circulatory and respiratory systems. The bluish color of the skin and mucous membranes is by no means always manifest when respiration becomes impaired. Thus, in the coma of diabetes there may be asphyxial conditions without cyanosis. Strangely enough, despite the frequency with which this striking sign is observed in clinical experience, there has been no convincing and tenable explanation of precisely how cyanosis originates. Anatomic changes in the capillaries cannot be held to explain the characteristic changes in color. The production of blood pigments like methemoglobin having an unusual color has been postulated as a possible cause of cyanosis, particularly the so-called enterogenous cyanosis in which products of intestinal putrefaction have been held responsible for the alteration of the blood pigments.[1] Even if this doubtful reaction occurs it can at best account for relatively few cases in which the cyanotic symptoms are observed.

The most probable explanation of the blueness of the skin has seemed to lie in the amount of reduced hemoglobin present in the peripheral circulation. The precise factors implicated in cyanosis seem at length to have been definitely established by the careful researches of Lundsgaard[2] in the medical clinic of the University of Copenhagen. They demonstrate that abnormally high oxygen unsaturation of the blood in the peripheral capillaries is a cause of cyanosis.

1. Wells, H. G.: Chemical Pathology, Philadelphia, 1918, p. 580.
2. Lundsgaard, C.: Studies of Cyanosis, I, Primary Causes of Cyanosis, J. Exper. M. **30**: 259 (Sept. 1) 1919; II, Secondary Causes of Cyanosis, ibid., p. 271.

Despite this, however, no proportionality exists between the intensity of the blue and the amount of reduced hemoglobin. This, Lundsgaard says, may in small part be due to individual peculiarities of the skin and the subcutaneous tissue, which are known to influence in anemia the relation between paleness of the skin and the decrease in hemoglobin.

According to Lundsgaard's recent investigations, when the mean capillary oxygen unsaturation, which is calculated as the mean between venous and arterial unsaturation and is normally about 2 to 3 per cent. by volume, is increased to about 6 to 7 per cent., cyanosis appears. For this reason 6 or 7 per cent. may be called the threshold value of mean capillary oxygen unsaturation for the incidence of cyanosis. However, if the blood is completely saturated with oxygen in the lungs, the oxygen unsaturation of the venous blood may increase to 13 or 14 per cent. before cyanosis appears.

As might be expected, the change in the color of the venous blood due to oxygen unsaturation may arise in various regions of the body. In any event, the appearance of cyanosis will depend on the degree to which the venous blood happens to be oxygenated when it reaches the place at which unsaturation takes place and also on the vigor of the reduction proceeding therein. The increased oxygen unsaturation may, furthermore, be brought about either by an increased reduction of oxyhemoglobin to reduced hemoglobin in the peripheral capillaries or by an incomplete oxidation of the venous blood in the lungs. For example, abnormally great reduction during passage through the capillaries occurs during exercise, or when the blood flow is retarded, as in decompensated heart conditions. The other condition—incomplete oxidation in the lungs—may occur in certain maladies of the lungs and heart, and likewise when the alveolar oxygen tension is greatly decreased, as at high altitudes.

Obviously there must necessarily be a certain minimum of hemoglobin in the blood for cyanosis to result; for, as Lundsgaard points out, patients suffering from anemia in extreme degree cannot turn cyanotic. According to him cyanosis cannot be produced when the blood pigment is reduced to the point at which the oxygen capacity is below 6.5 per cent. by volume.

The bluish color arising under the conditions just discussed should be clearly distinguished with respect to its genesis from abnormal skin color associated with an increase above the normal number of red corpuscles in the circulation. Such a polycythemia or erythremia may be encountered at high altitudes and in certain forms of heart disease. The oxygen unsaturation in such cases does not exceed normal values. Usually the color of the skin is more reddish than blue, suggesting congestion or ruddiness rather than cyanosis; in fact, the oxygen content of the venous blood is likely to be greater even than that found in normal persons. Although the color of the skin in polycythemic patients has been described as "cyanotic," it will be preferable, now that its underlying distinction from cyanosis is clearly understood, to follow Lundsgaard's suggestion[3] henceforth to designate the condition by the name erythrosis, or false cyanosis.

BACTERIA AND VITAMINS

The demonstration that the nutritive welfare of the higher animals is dependent on an adequate supply not only of the familiar foodstuffs but also of certain as yet unidentified "food accessories," the so-called vitamins, has been stimulating in various fields of biologic science. The hypothesis of the rôle of vitamines in nutrition has been transferred to the growth of plants by Bottomley[4] with results that speak strongly for an analogy between plants and animals with respect to the promoting factors. Subsequently the possible part that may be played by substances analogous in function to the vitamins of animal nutrition has been debated with respect to the multiplication of bacteria.

Bacteriologists have long recognized the difficulties attending the production of cultures of micro-organisms on synthetic mediums prepared from purified substances. Blood serum, tissue extracts and decoctions and other mixtures of largely unknown chemical make-up have been employed by preference as culture mediums for bacteria. For a long time the necessity of supplying such tissue products was assumed to be attributable to the fact that the lowest forms of life can attack only a limited group of fairly simple compounds. The native proteins, for example, are singularly resistant to direct disintegration by bacteria; whereas the cleavage products of proteins, the amino-acids, form an excellent nitrogenous pabulum for microbial nutrition. Latterly, however, it has become apparent that mixtures of even such simple nutrient fragments as amino-acids, sugars and inorganic salts, in mixtures of suitable reaction are poor culture mediums. To earlier evidences of the need of something more in the successful cultivation of bacteria, particularly the more delicate pathogenic varieties,[5] further testimony has been added in the case of the diphtheria organism by Davis and Ferry[6] of Detroit. They found that it could not be cultivated in synthetic mediums composed of amino-acids and mineral salts adjusted to the optimal hydrogen-ion concentration. Addition of the extractives creatin and creatinin, and the purin bases xanthin and

3. Lundsgaard, C.: Erythrosis, or False Cyanosis, J. Exper. M. **30**: 295 (Sept.) 1919.

4. Bottomley, W. B.: Some Accessory Factors in Plant Growth and Nutrition, Proc. Roy. Soc. London, Series B, **88**: 237, 1914-1915.

5. Cole, S. W., and Lloyd, D. J.: The Preparation of Solid and Liquid Media for the Cultivation of the Gonococcus, J. Path. & Bacteriol. **21**: 267, 1916-1917. Gordon, M. H.; Hine, J. G., and Flack, M.: An Experimental Study of the Cultural Requirements of the Meningococcus, Brit. M. J. **11**: 678, 1916. Lloyd, D. J.: On Vitamins, Amino-Acids and Other Chemical Factors Involved in the Growth of the Meningococcus, J. Path. & Bacteriol. **21**: 113, 1916-1917. Agulhon, H., and Lyroux, R.: Contribution à l'étude des vitamines utilisables à la culture des microorganismes; application au bacille de l'influenza (B. de Pfeiffer), Compt. rend. Acad. d. sc. **167**: 597, 1918.

6. Davis, L., and Ferry, N. S.: Studies on Diphtheria Toxin, II, The Rôle of the Amino-Acids in the Metabolism of Bacterium Diphtheriae, J. Bacteriol. **4**: 217 (May) 1919.

hypoxanthin, was of no advantage. Typical luxuriant growth of *Bacterium diphtheriae* was obtained in a mixture of 99.5 per cent. of synthetic medium and only 0.5 per cent. of bouillon. Production of active toxin, however, required the presence of 10 per cent. bouillon. "Peptone" permitted only deficient growth and toxin formation. Davis and Ferry believe that such observations suggest a vitamin requirement, furnished in these cases by the beef infusion, not only for the luxuriant growth of the diphtheria bacillus but also particularly for strong toxin production. Incidentally, they believe that the results obtained favor the view that diphtheria toxin is not a synthetic product but rather "a catabolic substance elaborated by *Bacterium diphtheriae* only in the presence of certain amino-acids and accessory factors, the latter probably of a vitamin character."

Kligler[7] has recently noted, in studies made at the Rockefeller Institute for Medical Research, that the growth of a large number of pathogenic bacteria, including the streptococcus, pneumococcus and meningococcus, is favorably influenced by the addition of small amounts of tissue extracts. Beef heart, rabbit and cat tissues, and human nasal secretions contain substances favorable to the growth of the organisms tested. The mucosa of different organs, spleen, liver and kidney, are relatively rich in these substances, while muscle is relatively poor. The favorable effect of the extracts is manifested by an enhancement of growth and a reduction of lag. Neither the extracts alone nor the culture medium alone was capable of supporting bacterial growth suitably. Kligler interprets his results as evidence that the facilitating substances belong to the category of the vitamins; and since ether extracts are without the potency referred to, the conclusion is further offered that the vitamins favorable for bacterial development belong to the water-soluble rather than to the fat-soluble type.

"COLLOSOLS": AN UNCRITICAL ENGLISH ENDORSEMENT

Under the auspices of the British Association for the Advancement of Science, there has just appeared a report on the present status of colloid chemistry.[8] The work has been recognized as sufficiently important to receive the endorsement of the government Department of Scientific and Industrial Research. Of particular interest to physicians is the chapter on "Administration of Colloids in Disease" written by Alfred B. Searle, "consulting chemist, Sheffield." After a somewhat academic generalization of colloidal drugs, the "thesis" is devoted largely to the "Collosols"—proprietary preparations made by the Crookes Laboratories. The "scientific" evidence presented by Searle for colloids in medicine reads as if the advertising literature of the Crookes concern had been considered ample source of information. Thus: "Colloidal Manganese," besides having been "used with remarkable and surprising results in the treatment of coccogenic skin diseases, . . . gives excellent results [in impetigo, chronic seborrheic eczema and acute folliculitis] when employed in conjunction with intramine"! The grave danger of the intramine therapy has been known for more than two years both here and abroad,[9] in fact, one author stated that in cases of intramine injections, "the pain is undiluted torture." In a style as bombastic and verbose as the usual house-organ write-up, the report recklessly details all sorts of conditions in which so-called colloids — and particularly the "Collosol" brand—have been recommended, but derogatory findings are conspicuous by their omission. Even Sir Malcolm Morris is quoted as lending his name (and title) to the endorsement of "Collosols."

In the United States the medical profession has created a means whereby physicians need not be misled by such "high" authorities as evidently has been the case with our English confrères. Once more the value of the Council on Pharmacy and Chemistry is strikingly manifested. What are the facts about "Collosols"? The Council has reported that a number of the "Collosol" preparations were not colloids at all, and "if . . . injected intravenously as directed, death might result, making the physician morally if not legally liable";[10] that in the cases in which the therapeutic claims were examined, the claims were found to be either exceedingly improbable or exaggerated; furthermore, that the A. M. A. Chemical Laboratory found "Collosol Cocaine," on analysis, to contain only 40 per cent. of the claimed amount of cocain.[11]

Such are the findings which have been presented to the American physician. But the British physician is now being made the object of an intensive advertising campaign for "Collosols," based in part on an uncritical, pseudogovernmental endorsement. Just so long as the English profession will not protect itself by creating a competent board to examine and judge proprietary medicines and to control methods of exploitation, just so long will such extravagant and even cruelly misleading claims continue to impede scientific progress in therapeutics.

7. Kligler, I. J.: Growth Accessory Substances for Pathogenic Bacteria in Animal Tissues, J. Exper. M. **30**: 31 (July) 1919.

8. British Association for the Advancement of Science. Second Report on Colloid Chemistry. Published for the Department of Scientific and Industrial Research by His Majesty's Stationery Office.

9. Ferrivine, Intramine and Collosol Iodine, J. A. M. A. **69**: 841 (Sept. 8) 1917.

10. Collosol Preparations, J. A. M. A. **72**: 1694 (June 7) 1919.

11. Collosol Cocaine Not Admitted to N. N. R., J. A. M. A. **72**: 1094 (April 12) 1919.

Marriage Laws Regarding Venereal Disease.—Thirteen states, namely, Alabama, Indiana, Michigan, New Jersey, New York, North Dakota, Oregon, Pennsylvania, Utah, Vermont, Virginia, Washington and Wisconsin, have laws enforced relating to venereal disease in connection with marriage. The laws vary in wording, but the purport of all is to prevent the marriage of all infected with acute syphilis or gonorrhea.

Current Comment

PATENTING THERAPEUTIC AGENTS

In the past, therapeutic agents and apparatus have been controlled by patents and trade-marks for profit. If there have been exceptions, they have been rare. The Principles of Medical Ethics of the American Medical Association contain this statement: "It is unprofessional to receive remuneration from patents for surgical instruments or medicines." This does not mean that the patenting is wrong in itself; there are occasions when it is wise, if not necessary, to obtain a patent in the interest of the public and, in the case of surgical instruments and medicines, of the medical profession. In certain instances it is absolutely necessary that the article produced shall maintain a definite standard of quality and purity—and, it may be added, shall be sold at a reasonable price. Enterprising pharmaceutical manufacturers have usually been ready to appropriate the results of scientific research by investigators or therapeutic measures suggested by practicing physicians. Not infrequently, in such instances, the desire for financial gain has caused the marketing of such products with extravagant, if not false, claims as to their value. Yet the patent laws may be used so as to protect and benefit the public and the medical profession. In research laboratories, work is being carried on resulting in the production of new therapeutic agents. It is important that these agents shall be so controlled that they may be made available without subordination to commercial interests. It has become practically necessary, therefore, for research workers to protect their products in the interest of the public welfare and scientific medicine. It has not been an easy matter to decide how best to bring about the desired results. This question has been before the Board of Trustees of the American Medical Association, and in 1914 the House of Delegates passed a resolution authorizing the board to accept at its discretion, patents for medical and surgical instruments and appliances, as trustees, for the benefit of the profession and the public, provided that neither the Association nor the patentee should receive remuneration from these patents. The Rockefeller Institute for Medical Research has solved the problem in a similar manner. In connection with the report of the discovery of several new arsenic compounds, Jacobs and Heidelberger,[1] working in the Rockefeller Institute, say:

> It may be appropriate to mention here that this substance and related compounds, described in the present and following papers of the series, are covered by U. S. Patents Nos. 1280119-27. Patents have also been applied for in foreign countries. All discoveries made at the Rockefeller Institute are made freely available to the public, in accordance with the philanthropic purposes of the institution. In order to insure purity of product and protection against exploitation, it has been deemed necessary in certain instances to protect the discoveries by patents. It is the purpose of the institute to permit any drugs which may prove of practical therapeutic value to be manufactured under license by suitable chemical firms and under conditions of production which will insure the biological qualities of the drugs and their marketing at reasonable prices. Other than through the issuance of license, the Rockefeller Institute does not participate in any way in the commercial preparation or sale of the manufactured chemicals; and it receives no royalties or other pecuniary benefits from the licenses it issues.

Here we have medicine at its best. The altruism of pure science operating for the benefit of the general public: scientific therapeutics freed from commercial domination.

1. Jacobs, W. A., and Heidelberger, M.: Aromatic Arsenic Compounds, II, The Amides and Alkyl Amides of *N*—Arylglycine Arsonic Acids, J. Am. Chem. Soc. **41**: 1587 (Oct.) 1919.

VARIETY OF DIET IN THE ARMY

To many persons the dread of a monotonous, unsavory diet represents one of the supposed unpleasantnesses of army life. It is assumed by them that only a slightly varied routine of simple foods is the customary, if not the essential, feature of the dietary of troops. Monotony and limited range of food combinations are traditional accompaniments of institutional management which have all too often been the subject of criticism from "humanitarian" investigators. There have doubtless been times, as there still are places, in which consideration of the regimen of persons with restricted liberty has been unfortunately neglected. Today, ignorance can no longer serve as a valid excuse. In the light of present day knowledge of nutrition, disregard of the relation of diet to human welfare can only be ascribed to indifference. "How about the army?" it may be asked. "Are not the paramount needs of drill and equipment, of marches and battle, allowed to relegate dietary niceties to desuetude?" Once upon a time the answer might have been, "Yes"; but the statistics now published by the Section of Food and Nutrition in the Medical Department of the U. S. Army give a different reply with respect to our army camps in 1917-1918. According to dietary studies made by the Bureau of Markets in Washington in 1917, thirty-nine different articles enter into the weekly food inventory for the average family. A study of 390 army messes,[1] however, indicated that the average number of articles used per mess per week was about fifty-five. For organizations on the march, when difficulties of preparation and transportation of food demanded a simpler menu, the number of articles used per mess for a three-day period was sixteen. A popular treatise on nutrition[2] reminds us that the human being exhibits two psychologic tendencies in his diet—one, to stand by old favorites; the other, to demand variety from day to day. Hence the diet that suits best usually consists of staples along with variables. Variety was formerly acclaimed solely as a mode of escaping monotony of diet; today it is recognized as a factor of safety in avoiding the danger of a lack of some essential to nutritive well-being. The successful menu maker strives to recognize both the love and the possible need of variety, without catering to it alone.

1. Murlin, J. R., and Hildebrandt, F. M.: Average Food Consumption in the Training Camps of the U. S. Army, Am. J. Physiol. **49**: 531 (Sept. 1) 1919.

2. Rose, Mary Swartz: Feeding the Family, New York, the Macmillan Company, 1916, p. 205.

QUININ AND QUITENIN IN MALARIA

There still seems to be uncertainty among pharmacologists regarding the fate of quinin in the body. While one writer presents evidence that only one third to one fourth of quinin administered is slowly recovered in the excreta,[1] others assert that quinin usually begins to appear in the urine shortly after its administration, and that almost the entire amount may be excreted within two days.[2] Investigators at the Liverpool School of Tropical Medicine have noted the power of tissues removed from the body and of tissue extracts to destroy the alkaloid.[3] The active agent is thermolabile and exhibits the property of an enzyme. The liver, kidney, muscle, intestinal wall, and probably the pancreas have considerable power to destroy quinin postmortem, whereas little or no action has been observed with the blood, spleen, bone marrow and divers glands. It is an unsafe conclusion to assert on the basis of such findings that the body tissues also destroy quinin in vivo. However, certain facts bearing on the theory of quinin therapy in malaria have already developed from the Liverpool studies. One product of the action of liver tissue on quinin is now demonstrated to be quitenin, a long known oxidation derivative of quinin. This compound has been reported to appear in the urine after the use of quinin. To test the hypothesis that quitenin may represent the derivative of quinin directly responsible for the relief of malarial rigors, large doses were given to a suitable patient. The substance was entirely ineffective,[4] and seems to be broken up into inert compounds, since little if any could be recovered in the urine. The quitenin hypothesis may therefore be abandoned so long as no further indications of its rôle are forthcoming.

ULTRAVIOLET RAYS AND VITAMINS

Although the effects of ultraviolet light on the organism have as yet received all too little investigation, there is no doubt that these invisible light rays have more action on protoplasm than the visible light does. The familiar inflammation exhibited in sunburn (erythema solare) is an illustration of what ultraviolet light can bring about. This effect on the skin is not due to heat, but presumably to the products of some photochemical reaction set up in the arterioles. There is something almost subtle in the manifestations of the nonvisible rays. For example, diphtheria toxin is readily destroyed by them, although it is not so easy to render the antitoxin inert. Various enzymes have also been shown to become inert through the action of ultraviolet light. Recently the influence of this agent on certain types of products containing vitamins has been investigated by Zilva[5] at the Lister Institute for Preventive Medicine in London. He found that butter exposed for eight hours to ultraviolet light undergoes a very noticeable change, the fat-soluble vitamin therein becoming inactivated. However, the antineuritic potency of yeast extracts and the antiscorbutic properties of lemon juice are not lost by such exposure. Zilva calls attention to the fact, noted by others, that the sterilization of milk by means of ultraviolet rays imparts to the milk a peculiar taste. He ascribes this to alterations in the butter fat brought about by the exposure. In view of the deterioration of the fat-soluble vitamin it seems likely that the action of ultraviolet light on milk may impair its nutritive value for infant feeding.

1. Greene, C. W.: Handbook of Pharmacology, New York, 1914, p. 229.
2. Hatcher, R. A., and Wilbert, M. I.: The Pharmacology of Useful Drugs, Chicago, American Medical Association, 1915, p. 78.
3. Lipkin, I. J.: On the Distribution and Destruction of Quinine in Animal Tissues, Ann. Trop M. & Parasitol. **13**: 149 (July 31) 1919.
4. Lipkin, I. J. (Footnote 3). Stephens, Yorke, Blacklock, Macfie and O'Farrell: Studies in the Treatment of Malaria, XXVIII, Quitenine Hydrochloride in Simple Tertian Malaria, Ann. Trop. M. & Parasitol. **13**: 117 (July 31) 1919.
5. Zilva, S. S.: The Action of Ultraviolet Rays on the Accessory Food Factors, Biochem. J. **13**: 164 (July) 1919.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Home Provided for Mental Inferiors.—The legislature of Alabama at its recent session passed a bill providing for the establishment of a home at Tuscaloosa, for mental inferiors. The campaign which resulted in this bill was led by Drs. Thomas H. Haines and William D. Partlow.

Sanitary Laws Enacted by Legislature.—In a bill introduced in the legislature by Representative Cobbs, the promotion of public health by leveling, ditching and draining the swamp lands of the state, was provided. This bill was made a law, September 25.——A bill providing for strict regulation of hotels, cafés, restaurants and eating places was introduced by Representative McLeon in the house and has been enacted into law by the senate.——The house of representatives has increased the appropriation for public health from $25,000 a year to $250,000 for four years.

ARKANSAS

Typhoid Survey.—Dr. R. Eugene Dyer, Little Rock, epidemiologist, U. S. P. H. S., has been sent to assist the state health officer in making a typhoid survey and other investigations of epidemic diseases.

Held by Health Board.—At present thirteen women are held in quarantine at the Sebastian County Hospital, Fort Smith, on account of venereal disease, while twenty-five others are under private medical treatment and under parole.

Personal.—Dr. John R. Dale, Texarkana, was run down and seriously injured by an autotruck, September 25.——Dr. John Thames, recently health officer of Little Rock, has taken over the U. S. P. H. S. work in that locality.——E. H. White, for eight years principal of the North Little Rock High School, has accepted the professorship of microscopy in the medical department of the University of Arkansas, Little Rock.

State Venereal Clinic.—At a meeting held in Little Rock, September 26, plans were discussed for a state clinic for the treatment of venereal disease. It was proposed that the Women's Reformatory and the Girl's Industrial School should each give $2,500, and that the city should also contribute a share. Dr. Charles W. Garrison, state health officer, Little Rock, said that the state would pay $1.50 per day toward the board and maintenance of each patient. It is expected that a building will be erected without delay.

CALIFORNIA

Tuberculosis Conference.—A joint meeting of the Los Angeles County Medical Association with the Southwestern Tuberculosis Conference was held at Long Beach, October 1 to 3.

Lane Medical Lectures.—The Lane medical lectures will be delivered by Dr. Alonzo E. Taylor, professor of physiologic chemistry in the University of Pennsylvania, and will

be on the topic, "Feeding of the Nations at War." The lectures will take place at Lane Hall, San Francisco, on the evenings of December 8 to 12, inclusive, under the auspices of the Leland Stanford Junior University School of Medicine.

Emergency Physicians Needed.—The secretary and executive officer of the California State Board of Health has issued a circular letter stating that the board would appreciate receiving the names of any physicians who, in the event of the return of the epidemic of influenza, would be willing to serve in emergencies in various parts of the state, at a salary of $200 a month, with $4 per day for subsistence and traveling expenses.

Ungraded Rooms in City Schools.—A bulletin has been published by the division of psychology of the Los Angeles city school district, and devoted to ungraded rooms. Part 2 describes the handling of feebleminded children in special schools, and Part 3 describes a plan of operation from which good results are said to be obtained in the advancing of mental ability as well as the borderline and backward cases. Mr. A. H. Sutherland, chief of the division, 419 South Olive Street, Los Angeles, will be glad to send to interested individuals copies of this bulletin, so long as they are available.

COLORADO

Personal.—Dr. Charles C. Reid, Denver, was elected first vice president at the meeting of the International Association of Lions Club, held in Chicago.——Dr. Rodney Wren, Trinidad, has been made chairman of the free clinic, which has recently been established in Trinidad.

Denver County Physicians in Service.—Out of a total membership of 378 during the war period, the Denver County Medical Society sent into the service ninety-six members, or 25.4 per cent. Of these, all but fifteen have returned, some of whom are on duty at U. S. General Hospital No. 21, Aurora. The only death in service was that of Lieut. Raymond E. Peebler, who died from pneumonia following influenza, October, 1918.

CONNECTICUT

Personal.—Dr. David R. Lyman, New Haven, superintendent of the Gaylord Farm Tuberculosis Sanatorium, has started for France, where he will attend the International Tuberculosis Conference as a representative of the National Association for the Study and Prevention of Tuberculosis.

Anniversary of Sanatorium.—In observance of the fifteenth birthday anniversary of the Gaylord Farm Sanatorium, the New Haven County Medical Association held its 135th semiannual meeting at the institution, October 1. Among the important papers presented were the presidential address by Dr. David R. Lyman, New Haven, who is superintendent of the Gaylord Farm Sanatorium, and addresses by Thomas R. Darlington, on "Industrial Medicine," and Dr. Edward R. Baldwin, Saranac Lake, N. Y., on "The Differential Diagnosis of Lung Conditions Usually Confounded with Tuberculosis."

DISTRICT OF COLUMBIA

Building for Physicians.—A modern office building is to be erected at Vermont and L Streets, Washington, for the exclusive use of physicians. It will be known as the Ansberry Building, will be eleven stories in height, and will be thoroughly equipped with laboratories and other appliances necessary for the use of professional men.

Personal.—Dr. J. Breckinridge Bayne, who did such efficient work in the typhus epidemic in southern Roumania during the German occupation period of 1917-1918, and who was decorated by King Ferdinand, has again been decorated by being recipient of the Order of the Regina Maria; First Class. Dr. Bayne now has charge of three American Red Cross hospitals at Cojascu, Titu and Voinesti, Roumania.

FLORIDA

Christmas Seal Campaign.—The executive committee of the Florida Anti-Tuberculosis Association, at a meeting held recently in Jacksonville, arranged plans for the nation-wide campaign to be inaugurated in December. The quota for Florida is $50,000. The state had been divided into zones, with Miami, Tampa, Jacksonville and Pensacola as headquarters of the respective districts. Dr. Louis A. Bize, Tampa, is zone chairman.

Work of State Health Board.—Dr. Ralph N. Greene, Chattahoochee, state health officer of Florida, has sent out circular letters to physicians advising them of what has been accomplished by the board and inviting them to make free use of the machinery provided by the board for the benefit of the public health of the state. There are five diagnostic laboratories at Jacksonville, Tampa, Pensacola, Miami and Tallahassee, at which examinations are made, with the exception of serologic tests for syphilis and gonorrhea, which are made only at Jacksonville and Tampa. During 1918, 17,423 specimens were examined in the central laboratory, Jacksonville; 7,792 in the Tampa laboratory; 2,756 in the Pensacola laboratory, and 2,565 in the Miami laboratory. The report also describes the work of the orthopedic service, and of the sanitary engineering, vital statistics, and child welfare departments of the state board.

ILLINOIS

Building for Physicians.—A building for the exclusive use of physicians is to be erected in Rockford by J. Frank Deuel. It will cost about $15,000 and will be equipped with a medical library, drug and medical supply rooms, and garage accommodations.

Sanatorium for Livingston County.—At a recent meeting of the board of supervisors of Livingston County, a tax levy of $60,000 was voted to be used for the erection of a tuberculosis sanatorium. There is also available for this purpose $20,000 previously collected. A site has been purchased south of Pontiac, and work will start early next spring. The institution will accommodate thirty patients.

Chicago

Practical Nursing Class.—The second class in practical and home nursing conducted by the Chicago Department of Health, which opened October 6, had an enrolment of 1,500 women.

Personal.—Dr. Rudolph J. E. Oden, who has recently returned from Cadillac, Mich., has been appointed attending surgeon to Augustana Hospital, and consulting surgeon to U. S. P. H. S. Hospital No. 2.——Dr. Roscoe C. Eaton has been discharged from the military service and has been appointed chief surgeon for Libby, McNeill and Libby.

Northwestern University's Plans for Medical Education.—Northwestern University has secured an option on 9 acres of land on the lake front at Chicago Avenue on which it is planned to erect within ten years buildings for its departments of medicine, dentistry, law and commerce, these buildings to cost approximately $1,350,000. It is expected eventually that on the medical school alone $2,500,000 will be expended. To carry out these plans the university has begun a campaign to raise $25,000,000, half of which it is expected will be obtained by June, 1920.

Faculty Changes.—The Loyola University School of Medicine, Chicago, announces the following changes in its faculty: Dr. Louis D. Moorhead, Chicago, has been appointed acting dean; Dr. Samuel A. Matthews, Mobile, formerly professor and head of the department of physiology and pharmacology at the University of Alabama, has accepted a similar position at Loyola; Dr. Andrew C. Ivy of the University of Chicago has been appointed associate professor of physiology; Dr. Elmer S. Maxwell, formerly of Vanderbilt University, Nashville, Tenn., has been appointed assistant professor of bacteriology; Dr. Frank M. Phifer, Chicago, has been appointed professor and acting head of the department of genito-urinary surgery, and Dr. Frank B. Lusk, Chicago, becomes supervisor of medical instruction in the dispensary.

MARYLAND

Corps of Physicians Organized for Influenza Emergency.—At the request of the United States Public Health Service, a corps of physicians for service in the event of a return of the influenza epidemic is being organized by Health Commissioner C. Hampson Jones. The corps will comprise 100 men who will be paid by the federal government. No serious outbreak is expected, but the Public Health Service wants to be prepared for any emergency.

Personal.—Col. Henry Page and the staff at U. S. Army General Hospital No. 2, Fort McHenry, entertained the base hospital units of the Johns Hopkins Hospital and the University of Maryland, October 8. Luncheon was served and an inspection of the hospital was made.——Dr. Erik Waller of Lidskolping, Sweden, is in Baltimore studying the methods employed at the Johns Hopkins Hospital and other local institutions.——Dr. Adolf Meyer, director of the Henry

Phipps Psychiatric Clinic, Johns Hopkins Hospital, who was recently injured in New York when a wagon ran over and crushed his foot, is able to deliver his lectures to the medical students.

Influx of Patients at Fort McHenry.—More than 500 patients have been admitted at U. S. Army General Hospital No. 2, Fort McHenry, in the past five days and Colonel Page states that this entails the heaviest surgical work the hospital has yet had. The majority of the men came from Colonia, N. J., and Williamsbridge, N. Y., where general hospitals have been abandoned, and from the base hospital at Hoboken, where many serious cases were taken on their return from France. Sixty of the patients were carried in on litters. Many will have to undergo operations. Nearly all of them are "long-time" ones and will remain at the fort for months. Some of the patients have already been in hospitals for a year and a half.

Quarantine to Fort McHenry.—As a result of a change of arrangements, the new quarantine boat, the *Neptune*, is now docked at a pier at Fort McHenry, and the quarantine inspector's office has been moved from the old Quarantine Building at Hawkins Point, opposite Fort Carroll, to a room in the Administration Building at Fort McHenry. The old quarantine station will not be used except for patients. Dr. Thomas L. Richardson, Baltimore, acting assistant surgeon of the U. S. Public Health Service, is in charge of the quarantine work. He has been connected with the quarantine service thirteen years, since it was taken over from the civic authorities and conducted by the federal authorities. He reports that the health conditions aboard vessels entering the port are very good.

NEW JERSEY

Physicians Form Association.—About fifty physician in the Clinton Hill section of Newark recently organized the Newark Physicians' Association to abolish contract and lodge practice. Dr. Bernhardt H. Woolf was elected president of the association.

Personal.—Clarence W. Way, Major, M. C., U. S. Army, Sea Isle City, who has been on duty in France since March, 1917, and is at present chief of the medical service at U. S. Army Camp Hospital No. 21, Autiel, Paris, has been ordered to Warsaw, Poland, to make a study of medical and sanitary problems of the Polish republic, and expects to remain in Poland for about six months.——Dr. Daniel Russell Hodgdon, head of the Newark College of Technology, has been elected president of the Hahnemann Medical College and Hospital, Chicago.

NEW YORK

Cornell University Staff Changes.—The Cornell University Medical College opened its twenty-second session, September 29. The annual address to the students was delivered by Dr. Graham Lusk, professor of physiology. The college announces the following appointments to the medical faculty in New York City: Drs. E. F. DuBois, assistant professor of medicine; Oscar M. Schloss, professor of clinical medicine, department of pediatrics; Henry H. M. Lyle, assistant professor of surgery; Jeremiah S. Ferguson, assistant professor of clinical medicine, department of pediatrics; Nellis B. Foster, assistant professor of medicine and associate attending physician to New York Hospital; John C. A. Gerster, assistant professor of clinical surgery; Charles V. Morrill and Robert Chambers, assistant professors of anatomy.

New York City

Plan to Enlarge Hospital.—Plans have been drawn up for the enlargement of the Kosher Hospital, Brooklyn, by an addition to the present hospital building which will give the institution 150 beds.

Harvey Society Lectures.—The second lecture of the Harvey Society series will be delivered by Dr. H. H. Dale of the Lister Institute of Preventive Medicine, on "Shock," at the New York Academy of Medicine, October 25, at 8:30 p. m.

Society of Medical Jurisprudence Meets.—This organization held the first meeting of the season at the New York Academy of Medicine, October 13. The paper of the evening was on "Selective Service and the Physician" by Dr. Victor C. Pedersen.

Hospital Installs Group Practice.—The Long Island College Hospital has installed a system of group practice whereby patients, by the payment of an ordinary fee, and in many cases without paying any fee, may have the benefit of consultation with experts in various specialties of medicine and surgery. Dean Otto Huffman announces that the members of the dispensary staff will meet daily as a diagnostic board to receive cases referred to them by any alumnus of the hospital. For the present this service will be extended only to the alumni of the hospital.

Personal.—Dr. George E. Brewer has sailed for France, at the request of the Surgeon-General, as a representative of the United States at the interallied congress of surgeons shortly to convene in Paris. He will return to New York about the middle of November.——Dr. and Mrs. Charles Kohly of Cuba are spending a month in New York.——Dr. Caroline S. Finley, director of Unit No. 1 of the Women's Overseas Hospitals, has returned to this country.——Dr. Marie Louise Lafort, director of Unit No. 3 of the Women's Overseas Hospitals, has returned to France to take charge of the American Memorial Hospital, which the American Fund for French Wounded is establishing in Rheims.

PENNSYLVANIA

Railroads to Aid Safety Fight.—Following conferences between the state public service commission and officers of the Pennsylvania and Reading railroads, announcement was made, October 9, that danger signs, to warn automobilists and others of unprotected railroad crossings, are to be furnished free of charge by both railroads, to municipalities, counties and townships throughout the state in which such unprotected crossings exist. Other railroads are expected to make similar agreements. These conferences followed a recent investigation conducted by the public service commission to determine the number of deaths and accidents at railroad crossings. There are 11,738 grade crossings in Pennsylvania of which 9,773 are unprotected and 68 per cent. of all persons killed at crossings are killed at these unprotected ones.

Philadelphia

Hospital Drive.—The million dollar campaign for the University of Pennsylvania Hospital totaled $370,164, October 11.

Medical Club Meeting.—The Medical Club of Philadelphia will hold a reception in honor of the Hon. William C. Sproul, governor of the state of Pennsylvania, Friday evening, October 17, at the Bellevue-Stratford. Just prior to the reception the regular meeting for nominations will be held.

Personal.—Dr. Charles J. Hatfield, executive director of the Phipps Institute and head of the Southeastern Pennsylvania chapter of the American Red Cross, sailed, October 9, to participate in a conference in London, October 16, 17 and 18, to arrange means to combat the spread of tuberculosis in the war ravished regions of Europe.

Aid for Hospital.—Residents in the neighborhood of the Frederick Douglass Memorial Hospital for Colored People planned to abstain from food one day in order to contribute to the hospital's campaign fund, October 11. Under the leadership of fourteen physicians, volunteer workers went into every section of the city to receive contributions for the hospital.

Tuberculosis Conference.—The North Atlantic Tuberculosis Conference was held, October 9 and 10, in the Bellevue-Stratford, and was one of the five like gatherings held throughout the United States to arouse the nation to the serious menace of disease. Three hundred and fifty delegates from the states of Pennsylvania, New Jersey, New York, Delaware, Maryland, Virginia, West Virginia and the District of Columbia, attended. This conference was held under the auspices of the National Tuberculosis Association and the Philadelphia Tuberculosis Committee.

WISCONSIN

Hospital Notes.—Health Commissioner George C. Ruhland announces that the South View Hospital, Milwaukee, is now available to physicians for diagnostic work, particularly in connection with diphtheria cases.——A tuberculosis sanatorium is to be established jointly by the counties of Menominee and Delta, in Menominee. A clinic for tuberculous patients has already been instituted.

Personal.—Dr. Harry Cohn, for four years acting superintendent of the Muirdale Sanatorium, Wauwatosa, and assistant medical director, has been given leave of absence for six months to organize and direct the new Milwaukee County Dispensary.——Dr. George R. Reay, LaCrosse, has resumed practice after twenty months' army service, of which

nine months were spent in France.——Dr. Frederick C. Rinker, for more than six years a member of the staff of the medical clinic of the University of Wisconsin, Madison, and chief of medical instruction of the University Extension Division, has resigned to enter private practice in Norfolk, Va.

State Society Meets.—The seventy-third (victory) meeting of the State Medical Society of Wisconsin was held in Milwaukee, October 1 to 3, under the presidency of Dr. Dennis J. Hayes, Milwaukee. This meeting was in honor of the 788 medical men of the state who entered the service during the world war, to welcome them home, to gain from their experiences, and to help them solve their problems. The following officers were elected: president, Dr. Charles R. Bardeen, Madison; vice presidents, Drs. Wilson Cunningham, Plattville; Henry W. K. Abraham, Appleton, and Philip F. Rogers, Milwaukee; delegate to the American Medical Association, Dr. Charles H. Lemon, Milwaukee, and alternate, Dr. Joseph F. Smith, Wausau.

CANADA

Personal.—Dr. Alexander D. Blackader, professor of pharmacology and therapeutics in McGill University, Montreal, delivered the annual address to the medical students on Founder's Day, his subject being, "Our Medical Faculty and the Value of Continued Medical Research."——Dr. Robert J. Kee, Toronto, has been acting for some months as expert to the pension board, Ottawa, in diseases of the eye, ear, nose and throat.——Major Harold Wilson, formerly of Kingston and Port Arthur, has been appointed medical advisor to the Canadian Pension Board in London, England. He served overseas with the C. A. M. C. four years.

New Sanatoriums for Tuberculous.—The Canadian Association for the Prevention of Tuberculosis met in Ottawa, October 9 and 10. Dr. George D. Porter, the secretary, in presenting his annual report stated that a number of new sanatoriums had been opened in Canada during the past official year of the association. Among them was the new Laval Hospital at St. Foy, Quebec, at a cost of $200,000; the Rosary Institute for Diseases of the Chest, at Vancouver, B. C.; a large provincial institution in Alberta; a new hospital for curable patients in Montreal, and new babies' wards in the preventoriums in Toronto and Saskatchewan. Dr. Porter further reported that the department of agriculture of Canada had taken important steps to guard milk from contamination and that important advances had been made by the department of soldiers' civil reestablishment in connection with the University of Toronto Research Department for the carrying out of serologic tests in both military and civilian cases.

Dominion Health Council Summoned.—October 7, the Hon. Newton W. Rowell summoned the new Council of Public Health for the Dominion of Canada. That board has fifteen members, composed of the chairman and chief executive officer of each provincial department or board of health in Canada, together with two women connected with women's activities, and a representative each of agriculture, academic, military and labor interests. To this National Council on Public Health the Dominion government set apart $180,000—$10,000 to be used for the combating of the venereal diseases—and $1,000 to be expended by the federal department of health along the same lines. The balance of the original grant will be proportionally assigned to the provinces, to which will be added by the provincial governments similar, or equivalent, amounts. The discussions of the council took the following lines: measures against influenza; conservation of child life; industrial hygiene; rural hygiene; habit-forming drugs. On the last of these the council forwarded a recommendation to the minister of health which it is hoped will reduce the habit of drug taking to no inconsiderable degree. The new department will gather and distribute literature outlining progress made in public health matters in each province.

GENERAL

To Eradicate Malaria.—The American Anti-Malarial Association held a convention at Florence, Ala., October 15, under the chairmanship of Hon. O. W. Underwood, United States Senator from Alabama, with the purpose of launching a campaign to eradicate malaria from the southern states.

Missouri Valley Society Election.—At the meeting of the Missouri Valley Medical Association, in Des Moines, Iowa, September 18 and 19, the following officers were elected: Dr. Charles Ryan, Des Moines, Iowa, president; Dr. Paul Gardner, New Hampton, Iowa, first vice president; Dr. Floyd Spencer, St. Joseph, Mo., second vice president; Dr. O. C. Gebbart, St. Joseph, Mo., treasurer, and Dr. Charles Wood Fassett, Kansas City, Mo., secretary.

Occupational Therapy Meeting.—The third annual meeting of the National Society for the Promotion of Occupational Therapy was held in Chicago, September 8 to 11, and the following officers were elected: president, Mrs. Eleanor Clarke Slagle of the Henry Favill School of Occupations, Chicago; vice president, Dr. Herbert J. Hall, Marblehead, Mass.; secretary, Mr. Louis J. Haas, Bloomingdale Hospital, White Plains, N. Y., and treasurer, Miss Marion R. Tabor, New York.

Meeting of the Association of Medical Milk Commissions.—The American Association of Medical Milk Commissions will meet in conjunction with the American Public Health Association at New Orleans, October 27 to 30. The program includes: the president's address, Dr. A. F. Furrer, Cleveland; "Production of a Safe Milk for Infants," Dr. W. H. Price; "Inspected Milk," Dr. L. R. DeBuys, New Orleans; "Human and Bovine Tuberculosis," Prof. M. P. Ravenel, Columbia, Mo.; "Dry Sterilization of Dairy Utensils," Dr. H. Moak, Brooklyn; "Changing Standards in the Production of Certified Milk," Prof. F. W. Howe, Boston, and "Present Status of Municipal Milk Control in This Country," Mr. G. B. Taylor of the U. S. Department of Agriculture. Following the scientific session will be a meeting devoted to the business of the organization.

Prize for Research on Carcinoma of the Cervix.—At the opening meeting of the Chicago Pathological Society, October 13, the president, Dr. Emil Ries, in lieu of a presidential address offered the following prize:

In 1896 in the first radical operation for carcinoma of the cervix by Ries certain lymph-nodes were removed on examination of which gland-like structures hitherto undescribed were discovered by him. These findings have since been confirmed and pictured by other authors. Robert Meyer claims that these structures are due to irritation of the endothelium of the lymph sinuses by infectious material absorbed from the ulcerated carcinoma.

It is desired that this claim be further investigated and the following points are tentatively suggested for examination:

1. Do all infected carcinomas produce such gland-like formations in the regionary lymph-nodes? (for instance: ulcerated carcinomas of stomach, rectum, lips, breast).
2. Are closed, non-infected carcinomas ever accompanied by similar formations? (for instance: closed carcinomas of breast).
3. Do infected lymph-nodes not associated with carcinoma, as for instance with primary sclerosis, soft chancre, infected wounds of the extremities, present similar structures?
4. Can the structures be produced experimentally?

For the most satisfactory solution of this problem a prize of $100 has been deposited with and will be paid by the treasurer of the Chicago Pathological Society on the decision of the prize committee. Profs. L. Hektoen, R. Zeit and E. R. LeCount have consented to act as a committee. The competing essays must be in the hands of the secretary, Dr. George H. Weaver, 629 South Wood Street, Chicago, by Sept. 1, 1920, bearing some number for identification. A sealed envelope bearing the same number and containing the name and address of the essayist is to be inclosed. The winning essayist will be invited to present personally the result of his investigations at the first meeting of the Pathological Society in October, 1920. If no essay is offered in competing for this prize at the expiration of the above term, the amount shall be returned to the donor.

FOREIGN

Centennial of Laënnec's Auscultation.—The town of Quimper in France celebrated recently the hundredth anniversary of the publication of Laënnec's first work on auscultation, the "Traité de l'auscultation médiate," by placing a wreath of palms at the foot of his statue in the public square, and commemorative tablets on the house where he was born and on his tomb.

Guide to Medical Paris.—The Paris Medical Faculty has recently published a practical guide to medical Paris and especially to its own courses, clinics and laboratories. The *Presse Médicale* is giving away copies of this pamphlet to its subscribers on demand. It is requested that those wishing copies address *Presse Médicale*, 120 boulevard Saint-Germain, Paris. Enclose 5 cents for postage.

Memorial to Pontoppidan.—A memorial tablet and bust in bas relief was recently unveiled at Copenhagen at the Kommune Hospital in honor of Prof. Knud Pontoppidan, whose work as a teacher, clinician and hospital administrator was

extolled. He occupied the chair of forensic medicine at the University of Copenhagen for many years, and published numerous works on nervous and mental disease and treatment. He died in 1916.

Deaths in the Profession Abroad.—Dr. **C. E. Socin,** professor of pathologic anatomy since 1917 and director of the pathologic institute of the University of Lausanne, Switzerland, died from perforation of the stomach while on a mountain climbing trip, aged 32.——Dr. **J. Pfister** of Lucerne, Switzerland, a well known ophthalmologist, research worker and writer on his specialty and on general subjects, aged 61. ——Dr. **F. Fulci** of the medical faculty of the University of Catania.

Foundation of Italian Archives of Biologic Sciences.—The *Riforma Medica* announces that a new medical review is soon to appear, to be entitled the *Archivio di Scienze Biologiche*. Prof. F. Bottazzi of Naples is to be the editor-in-chief, assisted by ten Italian professors, including Albertoni, Galeotti, Herlitzka and Sabbatani. The *Archivio* is to be published as material accumulates, in numbers of 100 or 150 pages, and will embrace in its scope animal and plant physiology, physiologic chemistry, physical chemistry applied to biology, and experimental pharmacology and pathology.

International Conference of Neurologists.—The Société de Neurologie de Paris has recently decided to inaugurate an international exchange of views on neurologic questions by inviting neurologists and psychiatrists from other countries to attend a special meeting to be held annually at Paris in July. It is planned to have two days of work with two sessions each day, and some one subject is to be appointed for discussion. The first meeting it is announced will be organized in July, 1921, and the subject appointed for discussion at that time is the clinical forms and the treatment of syphilis of the nervous system. Prof. J. A. Sicard has been appointed to open the discussion.

LATIN AMERICA

Sanitary Funds in Chile.—The congress of Chile has voted an appropriation of 300,000 pesos which the president can use to eradicate infectious diseases in any part of the country.

Railroad Sanitation in Brazil.—There has been established in Brazil a railroad sanitation service charged with caring for all matters connected with the health and welfare of railway employees. This service will include medical and surgical treatment of the employees, and preventive measures against the diseases that prevail in the zones crossed by the railroad.

Railroad Sanitation in Chile.—There has been established a railroad hospital at Santiago de Chile, which will be utilized to treat the victims of railroad accidents and also railroad employees taken sick while on duty.——There has also been established a sanitary service for railroads in the form of hospital cars for the transportation of sick people.

Banquet Tendered Austregesilo.—The *Brazil Medico* reproduces the addresses at the banquet recently tendered to Prof. Antonio Austregesilo at the Derby Club, Rio de Janeiro, by his friends and pupils. He has long been the incumbent of the chair of nervous diseases at the University of Rio, and is a director of the *Archivos Brazileiros de Medicina* and of the *Archivos de Neurologia.*

Malaria in Cuba.—In connection with the annual recurrence of malaria in the provinces of Camagüey and Oriente, Cuba, Dr. Juan Guiteras, the director of sanitation, has emphasized the need of additional funds in order to carry out antimalarial measures during the next winter and spring, as the appropriations previously available for this purpose have been exhausted. This year there were more cases of the disease, this being attributed to the immigrants from Jamaica who spread the disease in Cuba.

Typhoid Fever in Lima, Peru.—Dr. M. Pagador B. has just published some notes on the prevalence of typhoid fever in Lima. His study shows that the disease is most prevalent during the first four months of the year, and that the majority of cases, contrary to the experience elsewhere, occur between the afges of 1 to 5 years. The mortality showed an increase until the year 1901 when it began to show a slight decrease until this year, when it has again shown an alarming increase. The native Indians show the highest mortality rate, next in order the half breeds, and then the whites. The colored people seem to possess a relative immunity, but the yellow race shows a high mortality rate which has increased especially during the last few years.

Government Services

Personnel of the Medical Corps of the Army

For the week ending October 10 there were in the Medical Corps 4,428 officers, a decrease from the previous week of 409. The Medical Reserve Corps listed 3,589 officers. Since the beginning of the war there have been discharged 29,219 officers.

General Ireland Discusses Army Reorganization

At a meeting of the House military committee, October 3, Surgeon-General M. W. Ireland explained his objections to the pending bill for Army reorganization. According to the Army and Navy *Register,* General Ireland said in regard to the general staff:

THE GENERAL STAFF

"Under the Overman act the general staff has departed from supervising and coordinating the different branches of the Army, and has become an administrative bureau to a considerable extent. The administration of the medical department has suffered very seriously on this account, particularly in the handling of supplies, finances and of its personnel.

"Under the present organization of the purchase, storage and traffic, all of our splendid organization has been destroyed and an organization substituted which is not built upon sound principles, is most difficult to operate, is dreadfully expensive in overhead personnel and is thoroughly inefficient. The interference with the medical department supply system began about March, 1918, and the records are filled with instances of delays caused by the interbureau procurement system. Striking instances can be given:

PURCHASE OF MEDICAL SUPPLIES

"1. Gauze is one of the articles most frequently used by the surgeon in his operations. In fact, surgical processes cannot be carried on without an ample supply of sterilized gauze. Under the interference of the interbureau procurement system an attempt was made to substitute for the gauze we required a type of gauze wholly unfitted for surgical use.

"2. Before the interbureau procurement system was started my office had made arrangements to purchase from a reliable firm 20,000,000 meters of gauze at 65 cents a pound. When this came to the attention of the new system, the procurement of this material was taken over by it. At once the price went up to 95 cents a pound, and the purchase was eventually made at approximately 75 cents a pound, plus any increase in operating expense—a loss to the government, due to this interference, of $200,000.

"3. One of the crying needs in France was convalescent suits for patients in hospitals. Request for these suits was made from France in December, 1917. The Council of National Defense attempted to secure the material for these suits, but failed. Requisition for them (about 400,000 suits) was placed with the quartermaster department, under the interbureau procurement system, about May, 1918. Not a single suit was delivered before the armistice was signed.

"Let it be distinctly understood that the purchase, storage and traffic division did not take over the supplies of the medical department entirely until Nov. 15, 1918, several days after the fighting had ceased. In other words, the admirable record for furnishing the troops at home and abroad with medical supplies was due entirely to the supply system built up by the medical department at the beginning of the war. Since Nov. 15, 1918, the history of the handling of medical supplies has been a continuous one of failure and inefficiency. We have on file records of dozens of instances where great delay in filling requisitions has hampered the administration of our hospitals where the overseas sick have been treated. One of the glaring instances which came to the attention of the medical department within the last week was the failure to fill a requisition from General Hospital No. 21, Denver, dated July 1, for urgently needed mess equipment until September 27."

MEDICAL PERSONNEL INTERFERENCE

General Ireland further said:

"In the handling of personnel the medical department has suffered a great deal from the organization of the personnel division of the general staff. The assignment of the personnel of the medical department is one of the very important duties in the Surgeon-General's Office. In the medical department this can only be done by a medical officer. Yet the personnel branch of the general staff has taken upon itself to interfere with our work in many ways. On Aug.

14, 1918, a memorandum was issued at the direction of the general staff stopping all appointments of officers from civil life. This memorandum was issued without consulting the Surgeon-General's Office, and did not take into consideration the fact that the medical department obtained practically all of its officers from civil life, and not through training camps. Of course, this memorandum had to be modified for certain staff corps. Later regulations were issued, without consultation with the Surgeon-General, that all applications placed in Class 1 by the local draft board would be inducted into the service as enlisted men before being commissioned. The absurdity of such regulations was apparent to any one familiar with the problems of the medical department and the sources from which medical officers were obtained.

"When the order stopping all appointments was first issued it was published in the public press and caused a tremendous amount of uncertainty in the minds of medical men who had applied for service with the medical department. It gave an idea that a sufficient number of medical officers had been obtained to meet the expected needs. Medical men thereupon gave up the idea of entering the Army and resumed their civilian activities. It took a long time to explain to the medical profession of the country that the medical department needs were unsatisfied. These obstructions to the process of obtaining medical officers came at a time when the medical department was exerting all its energy to secure enough medical officers to meet the demands of the Army, and simply added another burden for the department to carry when the office was already strained to its utmost to accomplish the work in hand.

"In October, 1918, the personnel division of the general staff issued an order assuming entire responsibility for the appointment of officers for all branches of the military service. By these regulations all personal touch between the department requiring the applicant's services and the applicant himself was removed. Thereafter staff corps were to obtain their officers by requisition on the general staff, in the same manner as soap or harness oil is obtained from a depot.

DISCHARGE OF OFFICERS

"Upon the signing of the armistice orders governing the discharge of officers were issued, without consultation with the Surgeon-General's Office, and without any apparent comprehension or consideration of the problem confronting the medical department. Department and camp commanders were authorized to discharge officers, including medical officers. At this time practically all the sick and wounded resulting from active operations of the American Army overseas were still in France, and the medical department was confronted with the necessity of opening additional general hospitals in this country in anticipation of the return of these sick and wounded to the United States. The only source of supply of medical officers to run these hospitals was the officers and enlisted men of the medical department at camps in the United States rendered surplus by the signing of the armistice. This source of supply was jeopardized immediately by the issue of Circular 75. The Surgeon-General asked to have this order modified, so far as it related to medical officers, but this was refused by the general staff. The situation, however, was eased a good deal by the publication of a circular on December 7. But in spite of the fact that the general staff stated that 'the needs of the medical department, both past and future, are appreciated,' on March 24 a circular telegram was sent to all department and camp commanders directing them to make changes in assignment of officers without reference to higher authority, and stating that any Class 1 or 2 officers who could be spared may be discharged without securing the approval of chiefs of staff corps; and added that no officer in Class 1 or 2 would be thereafter available for reassignment when surplus. It took the medical department several days to obtain a modification of these instructions, and, in the mean time, a number of valuable officers of the medical department who were needed for the proper care of the sick and wounded were discharged without reference to the Surgeon-General.

"In the demobilization of medical officers the general staff has insisted that all medical officers for discharge shall be reported to Room 330, War Department, instead of the Surgeon-General. As these reports all had to come to the Surgeon-General for his recommendation, the resulting delay has cost the government thousands upon thousands of dollars, without any benefit to the service. The reading of the circular 'Operations and Plans of Personnel Branch, Operation Division, General Staff,' published over the signature of the chief of the personnel division, shows how extensively the general staff proposes to go into the actual control of the personnel of the different staff corps and departments, altogether outside of the recognized duties of the general staff to supervise and coordinate the different activities of the Army."

LACK OF REPRESENTATION ON STAFF

Questions were asked by Mr. Sanford as to the representation of the medical department on the general staff. While officers had been detailed to the staff it was not fair, remarked General Ireland, to assume that his department was actually "represented." A month ago Colonel Miller was assigned to duty with the general staff, and, on reporting there, was instructed to return to the Surgeon-General's Office, and was informed that he would be called upon whenever it was necessary to use his services. The result was that he had performed no duty with the general staff and was performing no duty in the Surgeon-General's Office.

General Ireland called attention to the effect of the bill on the admission of officers to the corps; it evidently repealed existing law that had been in satisfactory operation since 1834, and which had been a protection against favoritism. General Ireland was also desirous that the bill provide for medical corps personnel on a percentage basis, instead of by numerical strength. As to this and other defects in the bill, Mr. McKenzie took occasion to remark that "there was no danger of the pending bill being reported out of committee, and the Surgeon-General could be assured that Congress would take care of the medical department." It was also pointed out to the committee that the bill repealed the present excellent promotion system pertaining to the medical department, General Ireland being "strongly opposed to any process of selection." The method of elimination in his corps was eminently satisfactory, and it was essential to retain it. He was even in favor of extending this to grades senior to those now affected. General Ireland recommended that the period of service as first lieutenant be reduced from five to three years. This would make the service more acceptable to candidates, which it was now exceedingly difficult to obtain.

As for the reservists who had served in the war and who desired to enter the regular corps, General Ireland suggested that it be arranged so that they would receive credit for the service, as it was during the war, when first lieutenants were promoted after one year's service. This, under existing circumstances, would practically place these emergency officers in the grade of major. He would not increase in these cases the age limit of 40 years, but he would waive the minimum age limit of 32 years now applying to other candidates. Mr. Sanford referred to the American medical reservists who had served with the British forces, and who had not been promoted, giving the instance of a friend who had been through the worst of the battles in France, many times under fire, and, at the end of the war, was demobilized as a first lieutenant. This was on account of an order that prohibited the promotion of these officers, and, understanding that the chief of staff issued this order, Mr. Sanford did not hesitate to say that it was "the most cruel and stupid order he had ever heard of." General Ireland agreed as to the injustice with which these officers had been treated.

ELIMINATION AND PROMOTION

General Ireland suggested that the present law be changed so that it would be possible to get rid of an officer who was disabled through his own misconduct without being obliged to wait a year for his reexamination, as in the case of other officers disqualified by service. These officers, he said, should be separated from the service without any such delay. This could be accomplished by leaving the question of whether an officer should be retired or wholly retired to the discretion of the President. General Ireland also opposed the provision in the bill for second lieutenants in the dental corps. It was hardly to be expected that qualified dentists would be attracted to the service by this "handicap." He suggested the abolition of the grade of second lieutenant in the veterinary corps for the same reason.

Mr. McKenzie endeavored to obtain from General Ireland some general views on the merits of the pending bill, but that officer considered it was none of his affair to go fully into a discussion of the measure, preferring to confine himself to a presentation of the needs of the medical department. He felt, however, that there was little required in the way of amendment of the national defense act to meet the situation adequately. This would, for example, provide a "surgeon-general" as the head of the medical department, instead of a "major-general" at the head of the medical

corps only, as is provided in the War Department bill. General Ireland spoke earnestly of the difficulty in obtaining medical officers and of the desire of officers to resign. He also reminded the committee that if universal training were adopted it would be necessary to have fully a thousand doctors at the camps, for it must be remembered that the boys would be afflicted with the diseases of childhood, and there must be every action taken against sickness. He felt that for this purpose the members of the profession in civil life would offer their services as they had done so generously during the war without resort to conscription.

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA
Los Angeles—Saverien, A. E.

INDIANA
Pendleton—Smith, C. E.

IOWA
Indianola—Davis, J. G.

LOUISIANA
New Orleans—Sims, H. V.

MICHIGAN
Houghton—La Bine, A. C.

MASSACHUSETTS
Boston—White, A. J.
New Bedford—Atchison, C. M.

MISSOURI
St. Louis—Luten, D.

NEW YORK
Staten Island—Clark, F. C.

PENNSYLVANIA
Philadelphia—Miller, H. C.
Toland, J. H.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

NOTE.—In the following list, L. signifies lieutenant; C., captain; M., major; L. C., lieutenant-colonel, and Col., colonel:

ALABAMA
Albertville—Dowdy, I. L. (L.)
Birmingham—Rudulph, C. M. (C.)
Blountsville—Finley, F. G. (L.)
Hurtsboro—Hendrick, F. G. (L.)
Tuscaloosa—Grove, L. W. (M.)
Union Springs—Bowman, J. L. (C.)

ARIZONA
Phoenix—Malone, F. F. (L.)
Yuma—Ketcherside, H. D. (C.)

ARKANSAS
Arkansas City—Day, E. F. (C.)
Driggs—Landrum, F. W. (L.)
Hot Springs—Strachan, H. M. (L.)
Little Rock—Mobley, H. E. (L.)
Runnels, S. C. (M.)
Marshall—Butler, I. S. (L.)
Widener—Darnell, E. (L.)

CALIFORNIA
Ceres—Cartwright, S. W. (C.)
Coronado—Smart, R. (L. C.)
Dorris—Atkinson, A. A. (C.)
Glendale—Teel, A. W. (C.)
Hercules—McManus, F. P. (L.)
Lemon Cove—Fraser, M. W. (C.)
Long Beach—Dodsworth, R. M. (M.)
Los Angeles—Adams, C. B. (C.)
Gough, A. S. (L.)
Schneerer T. C. (L.)
Pasadena—Connor F. M. (L.)
Sacramento—Turner E. C. (M.)
San Diego—Percy, J. F. (M.)
Smith, F. J. (M.)
San Francisco—Abrahm, H. (M.)
Addis, T. (C.)
Casey, T. J. (L.)
Cohn, A. L. (L.)
Gelston, C. F. (L.)
Tillman, T. E. (C.)
San Jose—Barry, G. L. (L.)
Paterson, F. H. (L. C.)
San Luis Obispo—Cox, R. M. (L.)
Santa Barbara—Morris, C. L. (C.)
San Ysidro—Brown, B. H. (C.)
Stockton—McNeil, W. T. (L.)

COLORADO
Boulder—Dodge, H. C. (L. C.)
Colorado Springs—Filmer, B. A. (M.)
Del Norte—Miller, H. C. (C.)
Denver—Herrick, J. C. (C.)
Mudd, W. G. (L.)
Hotchkiss—Lewis, W. H. (L.)
Segundo—Adams, O. F. (C.)
Woodmen—Wallace, J. F. (C.)

CONNECTICUT
Bridgeport—Roberts, D. J. (M.)
Greenwich—Bergin, T. J. (C.)
Hartford—Bunce, P. D. (C.)
Daly, W. P. (C.)
Tyler, H. A. (C.)
Waterman, P. (Col.)
Meriden—Skladzien, P. W. (L.)
New Haven—Bacon, L. W. (M.)
Murphy, J. A. (L. C.)
Sheahan, W. L. (C.)
Torrington—Oelschlegel, H. C. (L.)
Waterbury—Webber, E. R. (C.)

DELAWARE
Wilmington—McEntee, B. J. (C.)

DISTRICT OF COLUMBIA
Washington—Anderson, C. L. G. (L. C.)
Chapman, R. M. (M.)
Davis, R. H. (L.)
Green, E. S. (L.)
Karpeles, S. R. (C.)
Kerby, J. P. (C.)
Ralph, C. E. (M.)
Willson, P. (M.)

FLORIDA
Clearwater—Dickerson, L. B. (L.)
Fort Ogden—Martin, I. E. (L.)
Live Oak—Whitfield, J. M. (C.)
Parama City — Whitfield, J. M. (C.)
Passagrille—Gautier, C. V. (C.)
Sanford—Neal, T. A. (C.)
Sorrento—Clinard, S. E. (C.)
Tampa—Cameron, F. A. (M.)

GEORGIA
Alto—McClure, R. E. (C.)
Ashburn—Turner, W. J. (C.)
Atlanta—Davison, T. C. (M.)
Denton, J. F. (M.)
Jackson, W. A. (M.)
McRae, F. W., Jr. (M.)
Quillian, A. F. (C.)
Upshaw, C. B. (L.)
Augusta—Traylor, G. A. (L. C.)
Broxton—Findley, C. W. (L.)
Brunswick—Wilson, T. B. (L.)
Cochran—Williams, W. C., Jr. (L.)
Cornelia—Garrison, D. H. (L.)
East Lake—Jackson, W. A. (M.)
Lavonia—Cornog, W. W. (C.)
Macon—Johnson, G. L. (C.)
Powelton—Herndon, O. E. (C.)
Zebulon—Sullivan, C. H. (L.)

IDAHO
Bruneau—Bartlett, J. C. (M.)
Malad City—Brothers, W. W. (C.)
Nounan—Lindsay, W. L. (L.)
Pocatello—Young, J. R. (L.)
Spirit Lake—Prindle, E. S. (L.)
St. Maries—Keneeshaw, R. S. (M.)

ILLINOIS
Alton—Hayes, L. H. (L.)
Chadwick—Calkins, A. A. (L.)
Charleston—Bisson, W. C. (C.)
Greer, C. E. (C.)
Henderson, J. F. (C.)
Chicago—Albrecht, C. A. (C.)
Asher, H. C. (C.)
Barnett, E. J. (C.)
Brand, G. D. (L.)
Brucker, E. A. (C.)
Buchbinder, J. R. (L.)
Burke, A. W. (C.)
Butler, W. J. (L.)
Carpenter, R. W. (C.)
Chesrow, E. J. (L.)
Chiasson, J. P. (L.)
Corper, H. J. (M.)
Davis, G. G. (L. C.)
Degan, J. T. (C.)
Del Beccaro, E. V. (C.)
Elliott, W. T. (L.)
Emons, H. C. (L.)
Ferguson, R. R. (M.)
Fowler, E. B. (C.)
Griffin, P. J. (C.)
Gunderson, N. O. (L.)
Hansen, T. L. (L.)
Hogan, L. G. (L.)
Jamieson, R. R. (L.)
Joranson, Y. (L.)
Kirkpatrick, R. R. (C.)
Lampe, H. G. (C.)
Martini, W. C. (C.)
McDermott, J. J. (L.)
Meacham, W. C. (M.)
Monaco, D. F. (L.)
Montgomery, A. H. (M.)
Morrow, N. C. (C.)
Morton, E. C. (M.)
Nortell, J. L. (C.)
O'Connor, A. (L.)
Ogden, C. H. (M.)
Ostroskey, G. L. (L.)
Petersen, R. W. (C.)
Pickett, W. J. (C.)
Rodaway, R. T. (C.)
Rosenstiel, M. (L.)
Ruyavitz, J. L. (M.)
Sachtleben, W. L. (L.)
Schwartz, F. F. (C.)
Stein, S. (L.)
Troy, E. P. (C.)
Wagner, G. W. (C.)
Weigen, A. J. (L.)
Wieneke, C. H. (L.)
Wilson, J. W. (L.)
Winholt, W. F. (C.)
Wyckoff, H. J. (C.)
Clinton—May, E. R. (C.)
Danville—Hole, M. L. (C.)
Steely, G. (C.)
Deerfield—Davis, C. J. (C.)
Edwardsville—Wharff, H. E. (C.)
Elgin—Flint, C. W. (L.)
Knight, H. T. (C.)
Evanston—Horan, F. P. (C.)
McClure, W. B. (L.)
Forrest—Duckett, W. F. (C.)
Glencoe—Patton, F. P. (M.)
Herrin—Murrah, F. C. (M.)
Highland Park—O'Neil, J. P. (L.)
Ullman, H. J. (M.)
Hillsboro—Lindberg, A. W. (C.)
Homewood—Wharton, J. F. (C.)
Joliet—Gburczyk, F. H. (L.)
Kaneville—Claridge, R. A. (L.)
Moline—Arp, A. H. (C.)
Sargent, E. (C.)
Morton—Goodyear, H. M. (L.)
Murphysboro—Ellis, E. K. (C.)
Oak Forrest—Turner, J. W. (M.)
Palatine—Ernst, H. C. W. (L.)
Peoria—Nystrom, E. E. (L.)
Plano—Lord, A. E. (M.)
Princeton—Flint, O. J. (L.)
Quincy—Mercer, R. (M.)
Robinson—Lowe, A. L. (M.)
Rockford—Rogers, H. R. (L.)
Rock Island—Miller, R. B. (C.)
Shanno—Sandrock, G. P. (L.)
South Wilmington—Levin, E. (L.)
Springfield—Staben, G. W. (L.)
Stuart, C. B. (C.)
Sterling—Brodrick, F. W. (L. C.)
Waukegan—Barker, F. M. (L. C.)
West Salem—Tietze, H. C. (L.)
Wheaton—Welden, E. A. (L.)
Wilmette—Mee, L. E. (C.)
Winfield—Anderson, J. L. (L.)

INDIANA
Brazil—Dilley, F. C. (C.)
Clinton—Evans, R. (L.)
Corydon—Sonne, I. H. (L.)
Delphi—Clauser, A. C. (L.)
Fort Wayne—Thimlar, J. W. (L.)
Harmony—Palm, W. (L.)
Indianapolis—Campbell, C. C. (M.)
Cook, C. J. (C.)
Indianapolis—Dav. J. T. (C.)
Maxwell, L. H. (C.)
Teters, M. S. (C.)
La Fontaine—Walker, J. L. (M.)
Lynnville—Railbourn, R. L. (C.)
Muncie—Bunch, F. L. (C.)
Robinson, M. (C.)
South Bend—Bosenbury, C. S. (C.)
Veedersburg—Smail, G. W. (L.)
Warren—Smith, L. W. (L.)
Wyatt—Kuhn, L. A. (C.)

IOWA
Belle Plaine—Snitkay, C. J. (M.)
Charter Oak—Huber, S. A. (C.)
Corydon—Sollenbarger, G. H. (C.)
Cresco—Daly, W. T. (C.)
Cylinder—Woodbridge, J. W. (M.)
Davenport—Blything, J. D. (C.)
Braunlich, G. (L.)
Des Moines—Eyman, E. V. (L.)
Stoner, A. P. (C.)
Dubuque—Gratiot, H. B. (C.)
Hampton—Johnston, H. H. (L.)
Iowa City—Diven, W. L. (L.)
Love, F. L. (M.)
Leon—Mitchell, C. H. (C.)
Logan—Hansen, H. (L. C.)
Maquoketa—Bowman, S. H. (L.)
New Providence—Felt, G. S. (L.)
New Sharon—Hartwell, S. W. (C.)
Perry—Wilkinson, H. B. (C.)
Pocohontas—Parker, G. F. (C.)
Sidney—Nelson, A. E. (C.)
Sioux City—Park, E. R. (C.)
Roost, F. H. (L. C.)
Walcott—McIntyre, J. A. (C.)
Webster City—Galloway, M. B. (C.)

KANSAS
Arma—Orr, W. E. (C.)
Rodda, E. D. (C.)
Centralia—Bouse, W. G. (C.)
Dodge City—Melencamp, N. E. (C.)
Englewood—Pierce, L. J. (L.)
Hutchinson—Seehorn, N. A. (L.)
Kansas City—Hombach, F. J. (L.)
Leavenworth—Taylor, F. B. (C.)
McLouth—Schaeffer, F. (M.)
Ottawa—Eye, B. F. (L.)
Shawnee—Thume, G. W. (L.)
Stafford—Webb, J. A. H. (M.)
Sterling—Trueheart, M. (C.)
Topeka—Allen, C. C. (C.)
Greider, W. H. (L.)
Hammel, S. A. (M.)
Wamego—Finney, G. A. (L.)
Wellington—Cobean, H. L. (C.)
Van Deventer, R. W. (L.)
Wichita—Agnew, T. M. (L.)
Hussey, E. E. (L.)

KENTUCKY
Covington—Nestley, E. J., Jr. (L.)
Cox's Creek—Overall, J. B. (L.)
Glasgow—Wells, G. M. (L.)
Graham—Harralson, J. H. (C.)
Grants Lick—Hodge, O. P. (C.)
Hodgenville—Solomon, A. L. (C.)
Hopkinsville—Moore, T. D. (L.)
Hutchison—Willmott, A. C. (L.)
Irvington—Moremen, L. B. (M.)
Kirbytown—Pease, T. A. (L.)
La Grange—Goldsborough, R. M. (C.)
Louisville—Bussey, F. H. (L.)
Dorsey, T. M. (L.)
Kunkler, W. C. (L.)
Wilfong, C. T. (L.)
Mill Springs—Parrigin, O. H. P. (C.)
Salyersville—Adams, R. C. (L. C.)
Turners Station—Hartman, J. C. (L.)

LOUISIANA
Baton Rouge—Whitaker, E. V. (C.)
Longville—Miller, E. L. (L.)
Monroe—Cole, H. C. (L. C.)
New Orleans—Ferran J. B. (L.)
Jones, H. P. (M.)
Jones, W. O. (C.)
Stell, J. S. (L.)
Shreveport—Dickson, G. B. (C.)
Munday, C. P. (C.)

MAINE
Augusta—Poulin, J. E. (L.)
Bangor—Adams, L. (C.)
Gardiner—Libby, A. B. (C.)
Livermore Falls—Hayden, L. B. (C.)
National Soldiers Home—Williams, D. L. (C.)
Portland—Webber, M. A. (C.)
Sanford—Wentworth, D. W. (C.)

MARYLAND

Baltimore—Brush, N. H. (C.)
Crook—C. S. (L.)
Doege, K. H. (L.)
Eidson, J. P. (C.)
Gross, H. (M.)
Hayward, E. H. (C.)
King, J. T., Jr. (L.)
Levin, M. B. (C.)
Linthicum, G. M. (L. C.)
Roberts, F. E. (C.)
Smith, B. D. (C.)
Webster, A. G. (L.)
Berlin—Tyndall, I. C. (C.)
Chevy Chase—Conrad, T. K. (C.)
Denton—Fisher, P. R. (M.)
Hagerstown—Smith, J. W. H., Jr. (M.)

MASSACHUSETTS

Arlington—Pratt, E. (C.)
Boston—Caines, R. J. R. (M.)
Fellows, A. W. (L.)
Grabfield, G. P. (C.)
Leland, H. L. (L.)
Lucas, J. D. (C.)
Lurie, M. H. (L.)
MacLeod, H. F. (C.)
MacPherson, D. J. (C.)
Shaw, J. H. (L.)
Souther, R. F. (M.)
Cambridge—Simonds, F. A. (C.)
Tomb, E. H. (L.)
Withington, P. (M.)
Dedham—Worthington, A. M. (C.)
Fall River—Hadfield, J. P. (C.)
Hathorne—Chronquest, A. P. (M.)
Holyoke—Clarke, P. H. (L.)
Hudson—Tierney, T. F. (C.)
Lanesboro—Barnes, L. D. (C.)
Lowell—Chagnon, T. D. (L.)
Lynn—Kane, W. V. (L.)
Lemaire, W. F. (C.)
Mitchell, F. W. A. (L.)
Schley, W. S. (C.)
Maynard—Persons, C. C. (L.)
Melrose—Sims, F. R. (C.)
Methuen—Atkinson, F. C. (L.)
Norris, R. C. (C.)
New Bedford—McCormick, W. A. (C.)
Moncrieff, W. A. (L.)
Newton—Viets, H. R. (C.)
Palmer—Ashmore, B. L. (L.)
Somerville—Cunha, M. F. (L.)
Mills—A. E. (L.)
Sharry, C. F. (L.)
Springfield—Graso, A. (L.)
Westboro—Gould, J. A. (C.)
Whitman—Spellman, M. H. (L.)
Worcester—Foran, F. L. (L.)
Lurier, I. (C.)

MICHIGAN

Ann Arbor—Malejan, H. H. M. (L. C.)
Battle Creek—Gallagher, R. V. (C.)
Burt—Peart, G. W. (C.)
Cassopolis—Dunning, E. C. (C.)
Coldwater—Grifleth, W. A. (C.)
Detroit—Carstens, H. R. (L. C.
Carter, J. M. (C.)
Christensen, C. A. (C.)
Crane, L. T. (L.)
Gehrke, A. E. (L.)
Host, L. N. (C.)
Mayer, E. V. (L.)
McClure, W. R. (C.)
Smith, T. H. (C.)
Storey, C. L. (C.)
Young, J. C. (L.)
Dollar Bay—Pearce, A. R. (C.)
Goodrich—Burt, F. J. (L.)
Grand Ledge—Fillinger, W. B. (C.)
Grand Rapids—Foshee, J. C. (C.)
Gwinn—Eisele, D. C. (L.)
Howard City—Miller, N. W. (C.)
Kalamazoo—Leland, R. G. (M.)
Lake Odessa—Morse, F. L. (C.)
Lansing—Kane, T. M. (L.)
Shaw, M. (C.)
Mount Clemens—Norton, W. H. (M.)
Rapid River—Conover, J. L. (C.)
Rogers City—Arscott W. W. (M.)
Saginaw—Richter, E. P. W. (M.)

MINNESOTA

Alexandria—Keene, L. M. (L.)
Autura—McGuire, C. J. (L.)
Anoka—Nelson, E. (L.)
Clear Lake—Clark, H. B. (L.)
Elbow Lake—Haugen, A. I. (L.)
Fairmont—Dewey, G. W. (C.)
Hastings—Wald, R. H. (M.)
Hibbing—Lee, T. A., Jr. (L.)
Mankato—Lloyd, H. J. (C.)
Minneapolis—Clark, G. M. (C.)
Dorge, R. I. (C.)
Josewich, A. (C.)
Wolfram, P. H. (L.)
New Ulm—Seifert, O. J. (M.)
Oslo—Amundsen, A. E. (L.)
Owatonna—Gratzek, T. (C.)
Rochester—Evans, R. M. (C.)
Hundlinig, H. W. (C.)
O'Hearn, J. J. (C.)
St. Paul—Dedolph, K. (L.)
Klein, H. N. (L.)
McCeary, G. E. (L.)
Meyerding, E. A. (M.)
Michael, J. C. (C.)
O'Malley, W. P. (C.)
Schoch, R. B. J. (C.)
Welsh, M. C. (C.)
Tracy—Workman, W. G. (M.)

MISSISSIPPI

Columbus—Richards, W. E. (M.)
Grenada—Browne, P. Z. (C.)
Laurell—Forman, D. N. (C.)
Tomnolen—Ruff, C. (L.)
Webb—Harris, W. R. (C.)

MISSOURI

Amoret—Corn, J. A. (C.)
Ashland—Suggett, F. C. (C.)
Berger—Wagner, W. H. (L.)
Wattenberg, J. E. (C.)
Doniphan—Proctor, C. A. (C.)
Fayette—Smith, M. N. (C.)
Hannibal—O'Keefe, C. D. (L.)
Hillsboro—Elders, G. W. (L.)
Hopkins—Maxwell, H. S. (C.)
Independence—Braun, H. E. (L.)
Kansas City—Annadown, P. V. (C.)
Bellows, G. E. (C.)
Capell, C. S. (C.)
Dennie, C. C. (M.)
Earnest, C. E. (M.)
Francisco, C. B. (L. C.)
Lilly, T. E. (L.)
Look, H. H. (C.)
Nutz, J. F. (C.)
Ousley, J. W. (C.)
Small, W. L. (M.)
Smith, G. W. (L.)
Woolley, P. V. (M.)
Louisiana—Lewellen, C. P. (C.)
Marshall—Scrutchfield, G. E. (M.)
Marston—McRaven, C. (C.)
Moberly—Maddox, J. (L.)
Odessa—Clayton, P. B. (C.)
Perryville—Vessells, F. M. (M.)
Ravanna—Loutezenhiser, J. L. (L.)
Springfield—Stone, M. C. (M.)
St. Joseph—Boteler, G. M. (L.)
St. Louis—Bock, L. H. (C.)
Bunch, J. R. (C.)
Byrne, R. E. (M.)
Campbell, C. S. (L.)
Chattle, W. M. (M.)
Davis, W. D. (C.)
Gallagher, E. E. (C.)
Gibbs, F. L. (C.)
Graham, E. A. (M.)
Hobson, A. D. (C.)
Kleinschmidt, C. C. (L.)
Luton, L. S. (C.)
MacDonald, J. W. (C.)
Meyer, C. B. (L.
Muench, L. O. (C.)
Peden, J. C. (L.)
Scott, C. D. (L.)
Shumaker, C. H. (L.)
Wobus, R. E. (C.)
Zeinert, O. B. (L.)
Sullivan—Schudde, O. N. (C.)
Vandalia—Bland, W. W. (C.)
Waverly—Johnston, E. L. (L.)

MONTANA

Glendive—Hathaway, R. E. (M.)
Great Falls—Patton, A. B. (C.)
Livingston—Johnson, C. A. (L.)
Roundup—Alexander, J. N. (M.)
Warmsprings—Carther, R. H. (C.)

NEBRASKA

Arlington—Hawes, G. F. (C.)
Crete—Stejskal, F. J. (L.)
David City—Palmer, C. E. (C.)
Fairfield—Bentz, G. H. (M.)
Farnam—Reeves, A. E. (C.)
Hartington—Thies, E. M. (L.)
Holdrege—Whitehead, E. I. (C.)
Ingleside—Pittock, H. J. (C.)
Johnstown—Remy, C. E. (M.)
Kearney—Hibberd, D. L. (C.)
Lincoln—Rider, E. E. (C.)
Rowe, E. W. (C.)
Spealman, J. F. (M.)
Murray—Gilmore, G. H. (C.)
Omaha—Davis, J. C., Jr. (C.)
Lanphier, V. A. (C.)
Omaha—Person, R. C. (C.)
Sage, E. C. (L.)
Osmond—Whitehead, E. H. (M.)
Pierce—Dinsmore, W. S. (L.)
Table Rock—Harman, L. D. (C.)

NEW HAMPSHIRE

East Jaffrey—Hatch, L. B. (L.)
Franklin—Smith, W. E. (L.)
Leconia—Brown, L. R. (L.)
Manchester—Perkins, F. H. (L. C.)

NEW JERSEY

Allendale—Rodman, R. W. (M.)
Boonton—Summers, W. J. (C.)
Camden—Phillips, T. W. (L.)
Cedar Grove—Englander, C. (L.)
Elizabeth—Shangle, M. A. (C.)
Greystone—Srygley, E. F. (L.)
Hoboken—Rea, J. G. (L. C.)
Jersey City—Maconald, J. J. (C.)
Mathews, R. H. (C.)
Newark—Blumberg, L. S. (L.)
Jedel, M. (C.)
Streen, N. E. (C.)
Orange—Harvey, T. W., Jr. (C.)
Plainfield—Cornwell, F. W. (M.)
Titsworth, S. R. (C.)
Ramsey—Gillett, H. E. (C.)
Summit—Reiter, W. A. (L.)
Union Hill—Curtis, G. P. (L.)
Woodstown—Thomas, C. W. (C.)

NEW MEXICO

Albuquerque—Kauffmann, H. B. (M.)
Deming—Smith, L. V. (C.)

NEW YORK

Albany—Allen, W. D. (M.)
Douglas, M. (M.)
Keens, W. G. (C.)
Beacon—Haight, J. E. (C.)
Bronxville—Heddens, V. O. (L.)
Brooklyn—Braun G. A., Jr. (L.)
Carmel, B. E. (L.)
Daugherty, J. E. (L. C.)
DeVries, J. C. (C.)
Flickinger, W. G. (L.)
Foote, M. N. (C.)
Hauff, J. J. (C.)
Hogan, G. F. (C.)
Mangiaracina, A. (L.)
McKenna, D. E. (L.)
Palmer, S. D. (C.)
Perlman, S. (L.)
Rubin, H. R. (C.)
Shields, J. A. (C.)
Shookloff, C. (L.)
Snow, H., Jr. (L.)
Sorkin, J. J. (L.)
Steinbugler, W. F. C. (L.)
Strahl, M. I. (C.)
Strickler, J. G. (C.)
Strumwasser, S. (C.)
Verilli, J. D. (C.)
Weinberg, N. (L.)
Weiss, S. (L.)
Buffalo—Bensley, M. G. (C.)
Bukowski, B. M. (C.)
Geisler, G. J. (C.)
Hauenstein, B. F. (L.)
Hill, W. O. (L.)
MacNaughton, W. F. (L.)
McCanty, W. L. (L.)
Powick, T. H. (C.)
Clayton—Ross, W. J. (L.)
Cooperstown—Cooke, J. B. (M.)
Corfu—Phillips, E. J. (C.)
Dansville—Dorr, J. C. (C.)
Flushing—MacLeod, J. (M.)
Good Ground—Davidson, D. (L.)
Harrison—Wylie, L. A. (L.)
Hornell—Burch, M. G. (C.)
Jamaica—O'Neill, G., Jr. (C.)
Johnson Creek — Mudge, M. F. (C.)
Little Valley—Hillsman, M. L. (L.)
New York—Almer, J. R. (L.)
Antell, L. (L.)
Bakwin, H. (L.)
Benjamin, E. L. (C.)
Blake, F. G. (C.)
Bloom, D. M. (C.)
Bluestone, E. M. (L.)
Bulkley, K. (M.)
Buntin, W. C. (C.)
Carp, L. (C.)
Clemenger, F. J. (L. C.)
Costanzo, R. E. (C.)
Eastman, F. W. (C.)
Estill, R. V. (L.)
Fagan, J. L. (L.)
Feinberg, M. M. (L.)
Ferguson, A. B. (L.)
Glucksman, F. (L.)
Goldfein, M. D. (L.)
Goldstein, W. (L.)
Herring, A. C. (L.)
New York—Hewitt, R. H. (C.)
Hunt, C. J. (M.)
Jacobs, A. W. (C.)
Kaufman, J. (L.)
Leibovitz, A. (L.)
Lynch, M. J. (L.)
Mamelok, L. (L.)
McIver, M. A. (L.)
Milici, A. (C.)
Minsk, L. D. (L.)
O'Connor, J. J. (L.)
O'Donnell, E. F. (L.)
Oliver, J. R. (M.)
Pallen, C. de S. (C.)
Phipard, W. (L.)
Reid, J. J., Jr. (L.)
Schaible, F. G. (M.)
Schultz-de-Brun, H. C. (M.)
Schwartz, A. A. (L.)
Scruton, W. A. (C.)
Shea, R. J. (L.)
Sokol, L. J. (C.)
Stewart, R. A. (M.)
Stiliger, W. F. (C.)
Thompson, W. B. (L.)
Tracey, W. W. (L.)
Tropauer, D. (L.)
Vance, B. M. (C.)
West, R. (L.)
Young, J. J. (L.)
Owego—Rubert, K. F. (M.)
Peckskill—Foshay, J. R. (L.)
Poughkeepsie — Brewster, D. T. Jr. (L.)
Clinkscales, G. S. (C.)
Pulaski—Ritter, F. L. (C.)
Rochester—Davis, J. C. (C.)
Haskell, C. K. (L. C.)
Swan, J. M. (L. C.)
Rye—Spies, E. A. (C.)
Schenectady—Reid, R. (C.)
Walker, C. W. (M.)
Sherburne—Benedict, A. K. (C.)
South Nyack—Enlird, K. A. (C.)
Staten Island — Sprague, J. T. (M.)
Sylvan Beach—McGrath, W. J. (C.)
Syracuse—Finigan, J. J. (L.)
Troy—Harvie, P. L. (C.)
Walsh, W. I. (L.)
Warwick—Aten, W. B. (L.)
Perry, S. W. (M.)
Woodhaven—Distler, G. A. (L.)
Worcester—Genung, L. T. (C.)
Yonkers—Mott, A. G. (C.)
Ramsay, D. (L.)

NORTH CAROLINA

Asheville—Hipps, A. G. T. (L.)
Charlotte—Hunter, B. R. (L. C.)
Leinbach, R. F. (M.)
Fayetteville—Vann, J. R., Jr. (C.)
Franklinton—Uhls, R. T. (L.)
Gastonia—Johnson, L. (L.)
Greensboro—Boyles, J. H. (L.)
High Point—Stanton, T. M. (C.)
Raleigh—Carroll, K. A. (C.)
Salisbury—Brawley, M. H. (L.)
St. Pauls—Lancaster, R. M. (L.)
Statesville—Easley, P. S. (L.)
Wilmington—Croom, G. H. (C.)
Thames, J. (C.)

NORTH DAKOTA

Fargo—Bayard, W. D. (L.)
Fortin, H. J. (L.)
Langdon—Kirkham, J. H. (C.)

OHIO

Akron—Luce, R. V. (C.)
Ashland—Fridline, J. (C.)
Bethel—Kennedy, C. C. (L.)
Bluffton—Steiner, J. S. (L.)
Bremen—Driver, J. R. (C.)
Bucyrus—Koch, W. A. (L.)
Cincinnati—Brummett, J. S. (M.)
Giesseler, R. J. (L.)
Staats, J. C. (L.)
Cleveland—Brookhart, L. S. (C.)
Filak, J. A. (L.)
Finch, P. F. (C.)
MacDonald, D. M. (L.)
Murphy, P. S. (C.)
O'Malley, G. P. (M.)
Taylor, H. L. (M.)
Columbus—Bouchor, H. E. (M.)
Boudreau, F. G. (C.)
Hoffhine, C. H. (L.)
Morgan, W. H. (C.)
Dayton—Hulbert, J. R. (L.)
Edison—Jackson, C. S. (C.)
Fremont—Kreilick, B. O. (C.)
Highland—McAllister, J. L. (C.)
Leetonia—Harman, H. E. (M.)
Lima—Chenoweth, O. E. (C.)
Loveland—Wakefield, J. D. (C.)
Manchester—Irwin, R. W. E. (M.)
Marysville—Goff, W. M. (C.)
Millersport—Atkinson, F. P. (L.)

Montville—Bohm, A. E. (C.)
Orrville—Blizzard, D. M. (L.)
Pandora—Basinger, H. R. (L.)
Richwood—Jolley, R. F. (M.)
Thornville—Clemson, F. R. (L.)
Wooster—Graven, T. A. (L.)
Youngstown — Goldcamp, E. C. (C.)

OKLAHOMA

Alva—Templin, O. E. (L.)
Cherokee—Huston, H. E. (L.)
Chickasha—Antle, H. C. (M.)
Enid—Bunker, L. L. (M.)
Henryetta—Briggs, H. A. (C.)
Kiowa—Johnson, C. A. (C.)
Miami—McNaughton, G. P. (L.)
Ochelata—Gunter, J. T. (L.)
Oklahoma City—Davis, E. F. (C.)
Stigler—Mitchell, S. E. (C.)
Tulsa—Lareau, H. G. (C.)
Waynoke—Gregg, O. R. (L.)

OREGON

Corvallis—Anderson, H. J. (L.)
Hardman—Gaunt, G. G. (C.)
Hermiston—Wainscott, C. O. (C.)
Portland—Downs, C. A. (C.)
Fenton, R. A. (M.)
Morrow, E. V. (M.)
Peaver, C. M. (C.)
Stewart, W. E. (M.)

PENNSYLVANIA

Albion—Umburn, L. (M.)
Ardmore—Potter, E. S. (L.)
Barnesboro—Healey, B. C. (L.)
Bellefonte—Reed, M. W. (C.)
Brockwayville — Aikman, D. M. (L.)
Bryn Mawr—Eveland, F. B. (L.)
Connellsville—Kidd, A. R. (M.)
Cressona—Santee, G. O. O. (M.)
Curllsville—Mooney, C. A. (L.)
Curtisville—Hemphill, D. E. (C.)
Du Boise—Patterson, F. G. (L.)
Elkins Park—Cole, C. J., Jr. (C.)
Ellsworth—Kamerer, S. A. (C.)
Fountain Springs—Fisher, A. W. (L.)
Freeland—Gable, J. C. (L.)
Indiana—Buterbaugh, H. B. (C.)
Johnstown—Schramm, F. M. B. (C.)
Kingston—Wolfe, E. I. (L.)
Lancaster—Cohn, C. A. (C.)
Latrobe—Ober, B. F. (C.)
Lawrenceville—Presper, E. (C.)
Meadeville—Hyskell, W. E. (L.)
New Bethlehem—Keller, W. C. (C.)
New Kensington—Smith, F. E. (C.)
North East—Scibetta, S. L. (L.)
Philadelphia—Alexander, J. (L.)
Alston, R. S. (L.)
Aspel, J. (C.)
Astley, G. M. (M.)
Coll, C. A. (C.)
Comerford, J. F. (L.)
Devereux, R. T. (M.)
Dorsett, E. M. (C.)
Englerth, L. D. (C.)
Fries, V. J. B. (L.)
Hartley, A. (M.)
Ingham, S. D. (C.)
Mackler, L. (L.)
Morgan, M. B., Jr. (L.)
Pearl, J. (C.)
Russell, C. N. (M.)
Seitz, J. S. (L.)
Thomas, W. H. (M.)
Tucker, H. (M.)
Phoenixville—Gotwals, J. E. (C.)
Pitcairn—Lichtenfels, R. C. (L.)
Pittsburgh—Clark, W. A. (C.)
Edwards, J. F. (L. C.)
Freed, R. S. (C.)
Halferty, H. E. (C.)
Hawkins, J. A. (L. C.)
Lindsay, J. A. (M.)
Moore, C. C. (C.)
Niebaum, E. C. (L.)
Ohlman, I. L. (C.)
Price, H. T. (M.)
Schmid, W. W. (L.)
Pittston—Hinrichs, A. G. (C.)
Reading—Snyder, T. M. (C.)
Sayre—Haines, C. N. (C.)
Laux, L. J. (L.)
Shingle House—Richards, R. W. (L.)
Smethport—Chadwick, E. V. (C.)
Ostrander, W. A. (C.)
South Fork—Pardoe, E. (C.)
Tamaqua—Baily, H. W. (C.)
Timblin—Allison, H. W. (L.)
Tioga—Hughes, L. W. (C.)
Watsontown—Winters, E. C. (L.)
Westland—Shidler, W. J. (C.)
Wilkes-Barre—Hauslohner, A. L. (C.)
Wilkinsburg — Cubbison, C. J. (C.)
Whitcraft, J. H. (C.)
Williamsport — Wright, L. W. (L.)

RHODE ISLAND

Pawtucket—Falcon, A. J. B. (C.)
Wheaton, J. L. (M.)
Providence — Bradshaw, A. B. (C.)
Harrop, D. S. (C.)
Palmer, H. G. (C.)
Westerly—Ruisi, J. E. (C.)

SOUTH CAROLINA

Charleston—Wagener, H. P. (L.)
Columbia—Schayer, I. (M.)
Neeses—Bolin, G. C. (L.)
York—McDowell, J. D. (M.)

SOUTH DAKOTA

Britton—Sullivan, D. W. (C.)
Esmond—Derdiger, L. B. (C.)
Hot Springs—Mattison, J. A. (L. C.)
Huron—Wood, T. J. (M.)
Sioux Falls—Mullen, R. W. (M.)

TENNESSEE

Gleason—Tatum, I. J. (C.)
Knoxville—Greer, J. J. (L.)
Massey, V. E. (C.)
Memphis—Clary, W. F. (M.)
Rucks, W. L. (C.)
Swink, W. T. (M.)
Milan—Harper, T. M. (C.)
Morristown—Milligan, L. H. (C.)
Nashville—Dabney, A. S. (M.)
Rieger, H. P. (L.)
Sharp, W. B. (L.)
Portland—Oliver, J. M. (C.)

TEXAS

Corsicana—Horn, F. W. (C.)
Dallas—Carrell, W. B. (M.)
Fort Worth—O'Reilly, J. J. (L. C.)
Gainesville—Gilcreest, E. L. (M.)
Galveston—Luecke, P. E. (L.)
Garland—Brown, C. S. (M.)
Houston—Wier, W. M. (C.)
Luling—Benbow, E. A. (L.)
Mart—Cooke, J. E. (C.)
Mexia—Brown, M. M. (C.)
Midlothian—Browne, W. C. (C.)
Port Arthur—Winter, H. A. (L.)
Stephenville—Gordon, T. M. (L.)
Temple—Sherwood, M. W. (C.)

UTAH

Price—Cloward, R. E. (C.)
Salt Lake City—Benedict, C. M. (C.)
Thorup, J. M. (L.)

VERMONT

Alburgh—Martin, S. H. (M.)
Battleboro—White, B. E. (L.)
Burlington—Twitchell, E. G. (C.)
Fairfield—Patton, J. R. (C.)
Hardwick—Taylor, H. F. (L.)
Lyndonville—Sheehan, D. J. (C.)
Montpelier—Dewey, J. E. (C.)
Shelburne — Mitchell, W. H. (Col.)
St. Albans—Melville, E. J. (C.)
Wallingford—Cooty, S. A. (L.)
Warren—Warren, A. B. (L.)
Williamstown—Cross, A. A. (L.)
Woodstock—Jackson, H. C. (C.)

VIRGINIA

Arlington—Ransom, C. A. (L.)
Draper—Harper, E. C. (C.)
Leesburg—Noland, S. T. (C.)
Lynchburg—Adkerson, W. C. (L.)
Port Royal—Holloway, J. M. (C.)
Purcellville—Hirst, V. B. (C.)
Richmond.— Blankingship, O. F. (C.)
Crawford, B. L. (M.)
Rio Vista—Carroll, P. M. (L.)

WASHINGTON

Centralia—Bell, H. Y. (C.)
Newport—Rosenthal, S. E. (C.)
North Yakima — Carver, W. H. (L.)
Seattle—Spaulding, L. (L.)
Wood, N. P. (M.)
South Bend — Anderson, F. W. (M.)
Spokane—Morse, W. H. (M.)
Tacoma—Carter, P. I. (M.)
Tekoa—Clizer, C. B. (C.)

WEST VIRGINIA

Cameron—Grim, W. E. (C.)
Charleston—Petty, L. A. (C.)
Phillips, S. H. (C.)
Clarksburg—Hood, R. G. (C.)
Craigsville—Callaghan, A. E. (L.)
Hansford—Ford, J. C. (L.)
Keyser—Ford, W. E. (C.)
Mullens—Steele, B. W. (C.)
Wheeling—Ryan, C. J. (L.)
Truschel, C. M. (L.)

WISCONSIN

Boscobel—Ruka, E. A. (L.)
Florence—Lyon-Campbell, A. F. (C.)
La Crosse—Grissom, C. B. (C.)
Marshall—Devine, C. B. (C.)
Milwaukee—Darling, F. E. (M.)
Hansen, J. W. (L.)
Muscoda—James, A. W. (C.)
New Richmond — Davin, C. C. (L.)
Prairie Farm—Buell, H. A. (C.)
Sauk City—Johnson, A. T. (L.)
Superior—Rydell, C. B. (C.)
Westby—Christensen, J. W. (C.)

WYOMING

Caspar—Geis, N. C. (L.)
Moorcroft—Gaule, E. T. (C.)

Foreign Correspondence

BELGIAN LETTER

LIÉGE, Sept. 17, 1919.

Medical Progress During the Period of the German Occupation

The evacuation of Belgian territory by the Germans has afforded the physicians who remained in the country during the occupation a welcome opportunity of publishing the results of their experience. On reading the publication of their records, it would seem that new diseases or at least new phases of old diseases have arisen and have been added to certain chapters of medicine. What we who took part in the war outside of Belgium know of the medical aspects of the war has nothing in common with what our colleagues had the misfortune to witness during the course of five long years. The bad quantitative and qualitative food conditions, together with the privations of every kind imaginable, have, it would seem, created very peculiar pathologic conditions, which, in turn, are reflected in all branches of medicine.

The Psychophysical Condition of Belgian Women During the War

M. Keiffer in the *Scalpel* contributes an article on the psychophysical condition of Belgian women during the war. The untold privations and the unheard of difficulties of human existence beginning with 1915, produced among the population of Belgium, many affections due to faulty nutrition, such as marked loss of weight, cervical adenitis and rachitic symptoms, which in many cases terminated fatally. Tuberculosis caused great ravages, especially among girls from 14 to 20 years of age. One phenomenon observed very frequently among married women at an age long before the menopause normally sets in was amenorrhea. This affection increased from 1915 on, and diminished in frequency and in tenacity along toward the time of the signing of the armistice. In certain women this condition lasted from two months to a year or more. It affected young unmarried women and also married women, and the question as to whether their fiancés or husbands, as the case might be, were present in the neighborhood or were absent seems to have played little part in the matter. This interruption of function in the ovarian gland cannot, then, be attributed to the absence of the men. Whether we regard this phenomenon as a state of torpor or as a momentary dormant state, it remains true that it was always possible with the organotherapeutic means at command to restore the physiologic rhythmic function of the gland. In endeavoring to discover the causes for this phenomenon one cannot put forward loss of weight, for, under other circumstances, this has proved rather favorable to menstruation; nor can we postulate chlorosis, nor mental depression, nor lack of exercise, nor lack of pleasurable excitement—social gatherings and participation in sports so necessary to the young. The etiology can be explained by an examination of the food-supply curve and more particularly by an inspection of the relative nutritive value of the materials entering into the flour and the bread used at various periods during the fifty-two months of war. The curve representing the fat content of the foods used could likewise be utilized in the research. Indeed, from the time when an improvement in the food conditions was brought about, the number of cases of amenorrhea decreased in an almost parallel manner. We are concerned, then, with a deficiency disease, although unable to specify just what elements were lacking entirely or existed in insufficient or in superabundant quantities in the food consumed; just what circumstances the presence or absence of which is necessary for the functional activity of the ovarian gland to proceed in its normal course. Keiffer calls to mind the great mental suffering that the Belgian women had to endure during the five years of the German occupation. He pays homage

to their ardent and tenacious patriotism which made it possible for them to withstand "with serenity the Machiavellian inventions of the Germans calculated to break down their resistance and annihilate their hopes."

Edema Among the Deported

At a meeting of the Academie de médecine de Belgique, M. Vandervelde and M. Cantineau introduced a suggestive communication on the deportation of Flemish civilians in 1916. Two hundred patients treated by them in the Saint Pierre Hospital at Brussels gave them the opportunity of making interesting observations from a medical point of view. Most of those deported suffered from a marked edema of the lower limbs, which was frequently associated with grave phlegmons. The general condition was brought about by lack of food and by the deplorable hygienic conditions under which they were compelled to live. The cardiovascular apparatus was attacked, and a profound anemia was added to their weakness, while the slightest effort occasioned an intense dyspnea. It would seem that this syndrome must be attributed to general intoxication due to renal insufficiency. With the clinical picture outlined above, oliguria was also constantly associated. The authors of the paper endeavored to make a special study of the urinary changes among the deported, for they all showed more or less serious symptoms manifested at times by oliguria and at times by genuine Bright's disease.

The therapeutic measures employed were exclusively of a dietetic nature. All that was needed by these poor, oppressed people, who had received no medical attention whatever, was rest and sufficient food, in order to soon be rid of all the symptoms mentioned.

Rest and proper food were all that was needed to do away with the blocking of the kidney and to cause the diuretic curve to mount suddenly, while, at the same time, the edema of the lower limbs disappeared. That is to say, it was not a question of a definite nosologic entity, and the cause of the condition lay entirely in the bad treatment and cruelty they had suffered at the hands of the Germans.

This indifference, on the part of the invaders, to health was, furthermore, quite the regular thing. Those deported were forced to do hard labor and were recruited without any medical examination. A military commission, without the aid of any medical authorities, had enrolled by force all the inhabitants of a given region whether they were afflicted with serious diseases or not. Definite examples of these cruel and inexcusable abuses are given. Forty-two per cent. of those deported were found to be suffering from tuberculosis in some form.

The Physical Development of Children

The investigations carried on by M. Demoor, professor in the Brussels School of Medicine, with reference to the height and weight of the public school children of Brussels during the war, led to conclusions analogous to the foregoing. In spite of all the societies for the protection of children, in spite of all the efforts to preserve their health, the growth of all the pupils has been retarded. Demoor found that (1) the average weight of children (boys and girls classed together) of all ages has diminished. At the end of four years the observed deficit is greater than the value of the normal development of two thirds of a year. The average height of children of all ages has decreased to the extent of one third of the usual annual development; (2) the average total decrease from 1914 to 1918 in the age-group comprising the ages from 7 to 14 is approximately equal—in both boys and girls—to the development of one year for weight, and to the development of one-half year for the boys and one-seventh year for the girls as regards height.

The truth of these observations was particularly evident among the population of the poorer quarters. This retarded physical development of children, which affects especially the children from 10 to 14 years old, may have a bad influence even on their future development. These children are at present much inferior to what they should be. Will this period of privation cause them to have a lessened resistance for the future? Will this physical impairment that they have suffered continue to exert a baneful influence on their future development? The author of the communication bases his conclusions on the curves of morbidity and mortality at different ages of childhood as plotted by Key in Sweden and by Porter in America. He believes that a relation exists between the age, the weight and the height, on the one hand, and the resistance to disease and death, on the other hand. The differences that he himself has observed thus far do not, however, justify him in forming a positive and exact opinion, he thinks, with reference to the resistance of the human organism to disease as shown by Belgian children. Nevertheless, in addition to these statements in regard to height and weight, the fact that in children affected by the period of occupation there was an increased number of cases of cervical adenitis, chronic affections of the nasopharynx, rachitic symptoms and pernicious anemia would indicate that the mortality was increased. It must be admitted that in the case of a great number of children the war produced organic affections more or less lasting and serious, although it is true that no definite statements can be made as yet in regard to the possibility of complete recuperation.

Cutaneous Affections

The manifold privations, the difficulties of human existence and the neglect of all hygienic rules of living had the same repercussive effect on cutaneous affections. In the *Paris médical*, Dr. Bayet gives the results of his personal experience on the subject. Three classes of affections were observed: (1) affections dependent on some disease of the nervous system; (2) affections that have their origin in insufficient or in unwholesome food, and (3) affections that are directly attributable to uncleanliness.

Among the affections associated with some disease of the nervous system he observed especially cases of lichenoid and of eczematous neurodermatitis, prurigo and alopecia areata. These affections were often resistant to treatment and subject to frequent recurrence. The author noted a pemphigus as the result of an emotional shock, and another time a generalized scleroderma.

The affections due to malnutrition were especially numerous among people of moderate means. The increase and the aggravation of tuberculosis afforded the opportunity of observing a greater number of cases of lupus tuberculosus, often associated with swelling of the lymph nodes. This special aspect of the affection and its frequency gave rise to a new term among the people, namely, "collier de la guerre" (war necklace).

Hard edemas, edemas of inanition so-called, generalized furunculosis and anthrax became much more common, not only among the poorer classes but also among the well-to-do.

A form of alopecia resembling that which very commonly results from infectious diseases was very prevalent, even among people in good circumstances, with negative family histories.

Affections due to uncleanliness were particularly numerous, the two principal reasons for which were the almost absolute lack of soap and the high price of coal. The latter factor was very important. Linen and underclothing being no longer boiled when laundered made possible the transmission on a grand scale of all kinds of contagious skin diseases: scabies, trichophytosis, etc. This hit not only the poorer classes but also the rich, for stopping at even first-class hotels was associated with a veritable danger from the standpoint of contagion.

The aforementioned studies on diseases observed during the German occupation of Belgium are the first to be published since the evacuation of the territory by the Germans. No doubt others will follow and will shed more light on these special pathologic conditions which one is tempted to call the "pathology of misery." A Holland journal recently called attention to the peculiar circumstance of the increase of cerebral hemorrhage and softening of the brain during the period of rationing that the Netherlands was obliged to submit to toward the end of the war. All this would seem to suggest that there may be some connection between deficiency diseases, among which beriberi may be mentioned, and certain aspects of war edemas.

Marriages

GEORGE YELLOTT MASSENBURG, Macon, Ga., to Miss Dorothy Shedd, of Columbus, O., in New York City, September 10.

• JOHN HENRY COSTELLO, to Miss Frances Alice N. Hagerty, both of Dorchester, Boston, September 28.

JAMES HARRY VETTER, Chicago, to Miss Gertrude Chase Colwell, of Rutherford, N. J., September 22.

HOWARD LYON, Winchester, Ky., to Miss Dixie Belle Helm, of Morgantown, Ky., October 2.

ARTHUR CLYDE TAYLOR, to Miss Adele G. Williams, both of Wilmette, Ill., September 30.

Deaths

Robert Montgomery Thornburgh ✠ **Colonel, M. C., U. S. Army;** Dartmouth Medical School, Hanover, N. H., 1897; aged 47; commander of Letterman General Hospital, Presidio of San Francisco; was killed, October 9, in a collision between automobiles. Colonel Thornburgh entered the military service as a Contract Surgeon in 1900, and was commissioned First Lieutenant and Assistant Surgeon U. S. Army a year later; was made Captain five years later, Major in 1910, Lieutenant Colonel, Medical Corps, and Colonel, M. C., National Army, in 1917. He was chief of the surgical service in Letterman General Hospital, Presidio of San Francisco, from 1910 to 1913; chief of the surgical service and commanding officer of the Department Hospital, Manila, P. I., from 1914 to 1916, and on his return to the United States was made camp surgeon of Camp Pike, Ark., prior to his reassignment to duty at the Presidio of San Francisco.

George Dallas Hersey, Charleston, S. C., formerly of Providence, R. I.; New York University, New York City, 1874; aged 72; a Fellow of the American Academy of Medicine, secretary of the Rhode Island Medical Society from 1880 to 1885; librarian since 1879 to 1912, and president in 1899 and 1900; editor of the *Providence Medical Journal* from 1899 to 1912; and editor of the *Annual Transactions of the Rhode Island Medical Society* for thirty-one years; from 1888 to 1908, visiting surgeon to the Rhode Island Hospital, and consulting surgeon to the institution thereafter; died at Somerville, N. C., September 28, from cerebral hemorrhage.

David Bernard Van Slyck, Pasadena, Calif.; University of Buffalo, N. Y., 1852; aged 90; surgeon of the 101st New York Volunteer Infantry, and of the Twenty-Second New York Cavalry, surgeon in chief of the Second Brigade, Third Division Cavalry Corps; medical inspector and medical director of the Army of Shenandoah, during the Civil War, thereafter a practitioner of Burlington, N. J., and Brookline, Mass., until 1885 when he moved to California; for several years president of the Pasadena Medical Society and once president of the Southern California Medical Society; died at his home, September 30.

William A. DeLong, Brooklyn, N. Y.; New York University, New York City, 1863; aged 79; a member of the Medical Society of the State of New York; a veteran of the Civil War, in which he served as assistant surgeon of the Seventy-Seventh Regiment, New York State Volunteers, from 1863 to 1865; inspector of the Brooklyn Board of Health from 1869 to 1876; and surgeon to the Brooklyn Fire Department for twenty-five years; died at his home, October 3.

Oscar Orlando Meredith, Breckenridge, Mo.; American Medical College, St. Louis, 1903; aged 39; a specialist in pediatrics; a member of the Missouri State Medical Association; who served during the war as Lieutenant, M. R. C., U. S. Army, and was honorably discharged, December 27, 1918; was crushed by the engine of the airplane, of which he was a passenger, when it fell at Cameron, Mo., September 27.

Emanuel S. Gans, Philadelphia; Jefferson Medical College, 1886; University of Pennsylvania, Philadelphia, 1894; aged 63; a member of the Medical Society of the State of Pennsylvania; for many years lecturer in the Medico-Chirurgical College of Philadelphia, dermatologist to the Medico-Chirurgical, Philadelphia General, and Mt. Sinai hospitals, Philadelphia; died at his home, September 30, from pneumonia.

James Jackson Shuler ✠ Raton, N. M.; University of Virginia, Charlottesville, 1879; New York University, New York City, 1880; aged 61; for many years chief surgeon for the Santa Fe System at Raton; died in the Atchison, Topeka and Santa Fe Railway Hospital, Topeka, Kan., September 28, after an operation for appendicitis.

Grace M. Clarke ✠ Detroit; University of Michigan, Ann Arbor, 1902; aged 41; president of the Detroit Free Dispensary for Women and Children; a member of the Women's Hospital and Infants' Home and a member of the Faculty of the Detroit College of Medicine; died at her home, September 28, from pneumonia.

William Sunderland Mott, Salem, Ore.; Eclectic Medical Institute, Cincinnati, 1885; aged 64; at one time president and later secretary of the Oregon State Board of Medical Examiners; died at his home, October 3, from heart disease.

Marshall F. Price, Los Angeles, Calif.; Northwestern University, Medical School, Chicago, 1875; aged 85; surgeon of the First Pennsylvania Light Artillery during the Civil War, with the rank of major; first president of the Southern California Medical Society; died at his home, September 25.

James Bernard Dinnan, Meriden, Conn.; Yale University, New Haven, 1904; aged 38; a member of the Connecticut State Medical Society; president of the Meriden Medical Society in 1914-15; superintendent of the State Tuberculosis Sanatorium, Meriden; died October 3, from typhoid fever.

John Alexander Hearst ✠ Philadelphia; University of Pennsylvania, Philadelphia, 1893; aged 48; for several years a member of the staff of the Polyclinic Hospital; a specialist on diseases of the ear, nose and throat; died at his home, in Germantown, October 4, from heart disease.

William Gaynor States ✠ New York City; New York University, New York City, 1881; aged 58; adjunct professor of rectal surgery in the New York Polyclinic Medical School for more than twenty years; a Fellow of the New York Academy of Medicine; died at his home, October 6.

George Washington Parker, Philadelphia; Hahnemann Medical College, Philadelphia, 1870; aged 80; a veteran of the Civil War, and for one term surgeon of the Department of Pennsylvania, G. A. R.; died at his home, October 4, from cerebral hemorrhage.

George M. Bower, Lenexa, Kan.; Bellevue Hospital Medical College, 1862; aged 82; a practitioner until 1906, when he organized the State Bank of Hillsdale, Kan., of which he became president; also state senator in 1872-73, died at his home, recently.

Evan Pickerell, Benson Mines, N. Y.; University of Pennsylvania, Philadelphia, 1890; died in the City Hospital, Watertown, N. Y., October 3, from fracture of the skull caused by the overturning of his automobile near Watertown.

Robert I. Fletcher, Arma, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1857; aged 87; surgeon of U. S. Volunteers throughout the Civil War; died at the home of his son in Arma, September 26, from cerebral hemorrhage.

Lesher K. Francis, Boyertown, Pa.; University of Pennsylvania, Philadelphia, 1871; aged 73; for four years a druggist of Philadelphia; died at the home of his son in Pottstown, Pa., September 22, from cerebral hemorrhage.

George Arneke Kretsinger, Oakland, Calif.; University of California, San Francisco, 1915; aged 31; a member of the Medical Society of the State of California; died at his home, September 8, from pneumonia following influenza.

Snyder John Henry Louther ✠ Somerset, Pa.; American Medical College, St. Louis, 1893; aged 51; who was honorably discharged as Captain, M. C., U. S. Army, January 8, 1919; died at his home, September 24.

George Orf, Indiana Harbor, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1905; aged 44; a member of the Indiana State Medical Association; died at his home, July 12, from cerebral hemorrhage.

Peter George Woods, Versailles, Mo.; Washington University, 1867; aged 75; a member of the Missouri State Medical Society; died in Kansas City, Mo., September 11, from valvular heart disease.

Green Leslie Robertson, Leander, Texas; University of Louisville, Ky., 1890; aged 53; a member of the State Medical Association of Texas; died in the City Hospital, Austin, Texas, September 22.

Louis Drechsler ✠ St. Louis; Washington University, St. Louis, 1896; aged 53; a specialist in diseases of the ear and throat; died at his home, June 23, from malignant disease of the face.

Washington Foster, Amherst, Ohio; Michigan College of Medicine and Surgery, Detroit, 1892; aged 66; for many years health officer of Amherst; died at his home, September 27.

George M. Tate, Botkins, Ohio; Cincinnati College of Medicine and Surgery, 1868; aged 81; died at the home of his son in Botkins, September 27, from carcinoma of the stomach.

Charles Belt, Batavia, Ohio; Medical College of Ohio, Cincinnati, 1878; aged 62; died at his home, September 17, from acute nephritis.

William W. Peek, Louvale, Ga.; Louisville (Ky.) Medical College, 1873; aged 67; died at his home, September 17, from heart disease.

William T. Blythe, Glezen, Ind. (license, Indiana, 1897); aged 69; died at his home, July 4, from arteriosclerosis.

✠ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE WILLIAM A. WEBSTER CO. AND THE DIRECT PHARMACEUTICAL CO.

The following letter from a Detroit physician was received a few days ago.

To the Editor.—I have just received a letter from the Direct Pharmaceutical Co. of St. Louis, Mo., quoting prices on drugs which are not more than one half what the leading manufacturers are quoting on the same drugs. I have received previous literature from this company but have not done business with them. I would be unwilling to prescribe their drugs unless I were satisfied that they are what is claimed for them. I would be glad to receive any information regarding this firm that may be available.

THE JOURNAL has also received some letters from physicians regarding the William A. Webster Co. of Memphis, Tenn., relative to a letter the concern was sending physicians in the form of a testimonial (reproduced in miniature on this page) and alleged to be from Dr. F. W. P. Butler of Columbia, S. C. Typical letters on the Webster advertising follow:

To the Editor.—Is there not some way through which the dignity of the medical profession can be protected from the circulation of such idiotic drivel as the enclosures display?

To the Editor.—I am sending you an example of the sort of "evidence" which some so-called ethical pharmaceutical houses expect physicians to take for scientific proof. It is pathetic that there are some in our profession who "fall for" such rot. I trust you will continue your campaign for honest and intelligent medicine.

F. W. P. BUTLER, M. D.
COLUMBIA, S. C.

Sept 19th, 1919.

The Wm. A. Webster Company,
Memphis, Tenn.

Gentlemen:

It is useless to treat maralia unless the system is fertilized or put in a receptive condition for the effect of the antidote for malaria so prevalent in this country. The human system is a good deal like land to be cultivated If the land is not put in a proper condition the seed will not germinate effectively

In your product you have an ingredent to agitate the proper flow of bile, and cause the liver, the great sugar and disinfectent mill of the human system to functiate normally. Therefore, giving quinine from any other condition is like pouring water on a duck's back.

I have begun the use of your Ferritonic-Woods' and only wish it was in my power to make every doctor in North and South Carolina do likewise.

Yours truly,
F. W. P. Butler

Reproduction (reduced) of a testimonial letter sent to physicians by William A. Webster Company of Memphis, Tenn. Those who operate this concern also have a sales agency in St. Louis, Mo., known as the Direct Pharmaceutical Co.

The "evidence" to which one of the correspondents refers and which another characterizes as "idiotic drivel" is reproduced on this page in miniature. It is a testimonial tor William A. Webster Company's "Ferritonic-Woods."

Our readers may wonder why we are discussing in one article the William A. Webster Company of Memphis, Tenn., and the Direct Pharmaceutical Co. of St. Louis. The reason is that the Direct Pharmaceutical Co. of St. Louis is apparently merely a sales agency for the William A. Webster Company of Memphis. It appears that orders sent in to the Direct Pharmaceutical Co. go to Memphis to be filled.

The following information regarding some of the products that have in the past been put out by the William A. Webster Company should be of interest to the profession. In government bulletins issued by the Department of Agriculture in October, 1913, there were reported some cases of adulteration and misbranding on the part of the William A. Webster Co. of Memphis, Tenn. A "Pure Concentrated Extract of Lemon" shipped by this concern was found by the federal chemists to be colored with a coal-tar dye "whereby inferiority was concealed," and while purporting to be a concentrated lemon extract, "in fact, it was not a concentrated lemon extract." Some "Pure Concentrated Extract of Banana" was found to have mixed with it an imitation banana flavor and an artificial color so as to "injuriously affect its quality and strength" and so that "its inferiority was concealed." "Pure Concentrated Extract of Pineapple" was found to have had mixed with it "an imitation extract of pineapple artificially colored." "Pure Concentrated Extract of Strawberry" had been mixed with "an imitation strawberry extract artificially colored." The same bulletins described the case of the government against a shipment of "Syrup Iron Iodide" made by the Webster concern in which the amount of iron iodid was less than half that claimed on the label. In each of the cases just described, the company pleaded guilty and was fined.

In a similar bulletin issued August, 1914, there were recorded several more cases of adulteration and misbranding charged against the William A. Webster Company. Some "Wine Coca Leaves" was held adulterated in that the amount of alcohol present was wrongly declared on the label; it was held misbranded in that while it contained cocain, the label failed to bear any statement regarding the quantity or proportion of this drug. Tablets of "Acetanilid and Sodium Bromid Compound" were found deficient in strength. "Anti-Vomit Tablets," "Aspirin Tablets," "Bismuth and Calomel Tablets," "Quinin Laxative Tablets," "Salol Tablets," "Sodium Salicylate Tablets," "Neuralgic Tablets," "Diarrhea Calomel Pills" and "Morphin Sulphate Hypodermic Tablets" were also misbranded in that the amount of certain ingredients found in them failed to tally with the amount declared on the label. In all of these cases also the William A. Webster Company pleaded guilty and was fined.

In a government bulletin issued in June, 1917, the same company was charged with adulterating and misbranding a quantity of Aspirin tablets which, instead of containing 5 grains as labeled, contained only a fraction over 1 grain. In this case, too, the company pleaded guilty and was fined. The table that follows briefly summarizes some of the cases just referred to:

	Amount Claimed		Amount Found	
"Syrup Iron Iodid, U. S. P."				
Ferrous Iodid	10%		4.6%	
"Acetanilid and Sodium Bromid Tablets"				
Acetanilid	3.50	gr.	2.94	gr.
"Anti-Vomit Tablets"				
Bismuth subnitrate	2.50	gr.	1.76	gr.
Cerium Oxalate	2.50	gr.	1.78	gr.
Cocain Hydrochl.	0.0833	gr.	0.0637	gr.
"Aspirin Tablets"	5.0	gr.	3.82	gr.
"Bismuth and Calomel Comp. Tablets"				
Bismuth subnitrate	0.1	gr.	0.22	gr.
Calomel	0.1	gr.	0.22	gr.
"Quinin Laxative Tablets"				
Acetanilid	2.0	gr.	1.69	gr
"Salol Tablets"	2.50	gr.	2.05	gr.
"Sodium Salicylate Tablets"	5.0	gr.	3.88	gr.
"Neuralgic Pills"				
Morphin sulphate	0.05	gr.	0.015	gr.
"Diarrhea Calomel Pills"				
Morphin sulphate	0.062	gr.	0.05	gr.
"Morphin Sulphate Hypodermic Tablets"	0.25	gr.	0.21	gr.
"Aspirin Tablets"	5.00	gr.	1.13	gr.

ANASARCIN ADVERTISING

To the Editor:—As an old Fellow of the A. M. A. I beg to present the following facts to you, and to ask if anything can be done by you to expose the methods of these people: A concern calling itself "The Anasarcin Chem. Co." of Winchester, Tenn., has caused to be sent to physicians a chart on the subject of "Diagnostics of Renal Diseases." This chart contains eighteen plates, which were all taken without knowledge or permission of either myself or my publishers, Wm. Wood & Co., from the third edition of my book on "Urinary Analysis and Diagnosis." The plates are partly composite plates, but mostly portions of plates, exactly reproduced from my book. I at once caused my publishers to write to the Anasarcin Company and a few days ago received a letter from a Dr. H. Elliott Bates of 118 East Twenty-Eighth Street, New York, whose letterhead says, "Medical Advertising." In this letter the writer says that it was he who suggested the sending of such a chart, and admits that all the plates were taken from my book. In this letter he offers to have a letter sent to every physician of the country "In which it is explicitly stated that the cuts on the chart were taken from your book, and that complete information regarding the matters treated on the chart can be found in your book." In other words he offers to advertise my book free of cost to me, so that I should take no further steps in the matter. I consider this entire matter an outrage, and thought it best to write to you for advice, since my publishers seem to think that in spite of the violation of the copyright nothing can be done.

Besides the cuts, some of the text on the chart is bodily taken from my book, while some of the other text, not taken from my book, but apparently compiled from different articles, is in part entirely wrong, so much so that I must be ashamed to its being associated with any of my own work.

By giving this letter your early consideration, and advising me what you think it best for me to do, you would greatly oblige LOUIS HEITZMAN, M.D., New York.

[COMMENT.—Readers of THE JOURNAL are, of course, familiar with the articles[1] that have been published on "Anasarcin," the "dropsy cure"! Knowing the standard of ethics that the Anasarcin concern adopts in the exploitation of its ridiculous squill mixture, our readers will not be surprised at the standard of commercial ethics which would justify the appropriation of copyrighted scientific material for nostrum advertising purposes. The statement of Dr. Heitzmann's publishers that "in spite of a violation of copyright nothing can be done" is, of course, incorrect. Something *can* be done by those who hold the copyright.—ED.]

1. THE JOURNAL, Jan. 26, 1906; May 4 and 11, 1907, and Dec. 8, 1917.

The Cattail: A New Food.—Among the many products which the Indians have taught us to use are such common and now indispensable foods as corn and potatoes. There are, however, many products which the Indians used and relished that have received little or no attention from the white man. The common cattail (Typha) is one of these products. The vast areas of cattail have been little utilized. Here is a plant with prolific growth, rich in starch and other products of food value, growing in situations now regarded as waste lands. The rhizome is the part used. Cattail flour is not much different in composition from other flours and could probably well be used. The practicability of obtaining the flour from the field is a question which deserves further attention and experimentation. Likewise, the question of cultivation would require careful investigation. The fact, however, remains that there are thousands of acres of cattails containing considerably over 2 tons of flour per acre which at present finds no use. It is not so difficult to get the flour in small quantities. Half an hour at digging and "peeling" has yielded three or four cupfuls of flour. The digging is not so different from digging potatoes and the peeling is about equally facile. This flour has been used in this investigation in several ways, first as part substitute for cornstarch in puddings.—P. W. Claassen, *Scientific Monthly* 9:179 (August) 1919.

Correspondence

NEED OF FURTHER RESEARCH ON THE TRANSMISSIBILITY OF MEASLES AND VARICELLA

To the Editor:—I have just read the abstract in THE JOURNAL (Oct. 4, 1919, p. 1086) of Sellards' article on "The Insusceptibility of Man to Inoculation with Blood from Measles Patients" (*Bull. Johns Hopkins Hosp.* **30**:257 [Sept.] 1919).

It is remarkable that Sellards was unable to produce this highly infectious disease by means of the blood or the nasal secretion of infected individuals. Not long ago, however, I had a similar experience with varicella (*Am. J. Dis. Child.* **16**:34 [July] 1918). Thus we are confronted with two diseases—the two most infectious of the endemic diseases in this part of the world—which we are unable to transmit artificially from man to man. The result was most surprising in regard to chickenpox, and if the same rule holds good for measles it would seem as if a basic principle must be involved. Evidently in our experiments we do not, as we believe, pursue nature's mode of transmission; either we fail to carry over the virus, or the path of infection is quite different from what it is commonly thought to be.

I am writing this note because this question has been in my mind for some time and has been stirred up again by this recent work on measles. It appears to be a phenomenon that might well be called to the attention of readers of THE JOURNAL; perhaps an experimental study of the question might be undertaken by those who have the opportunity and are not engaged in other fields of work.

ALFRED F. HESS, M.D., New York.

"FORMULAS FOR USE IN STANDARDIZING AUTOGENOUS VACCINES"

To the Editor:—In THE JOURNAL, October 4, under Clinical Notes, Suggestions and New Instruments, Sergeant Leo R. Tehon presented formulas for use in the standardization of bacterial vaccines. While serving as laboratory director of Evacuation Hospital No. 10, A. E. F., I had frequent requests for autogenous vaccines. At first we used Wright's method unmodified; but finding it rather cumbersome, we decided to try to modify it in some way that would make it more simple and take less time. After several trials we adopted the following method; it is very simple and can be done in a very short time: First, we used the blood of a soldier who gave a count of 6,000,000. We made a small puncture in the finger or ear, as in a cell count, and drew up the blood to point 0.5 in a white cell diluting pipet. Then a standard sodium citrate solution was drawn up in the pipet to point 1. This was drawn up in the bulb of the pipet, and the bacterial suspension was drawn up quickly to point 1, and this and the citrate blood were mixed as in an ordinary cell count. We had in this a blood with 3,000,000 red cells, and if we found two bacteria for each blood cell we had 6,000,000 per cubic millimeter, or 600,000,000 per cubic centimeter. We always worked with concentrated bacterial suspensions, as it was a very simple matter to dilute to any desired concentration of a lower count. The whole operation takes no more time than a simple blood count, and no other equipment except the sodium citrate solution.

J. S. WILSON, M.D., Lake Village, Ark.

REPORTS ON LOCAL ANESTHETICS IN LARYNGOLOGY

To the Editor:—At the suggestion of the Council on Pharmacy and Chemistry of the American Medical Association at its last meeting, the Section on Laryngology, Otology and Rhinology appointed a special committee to study and report on the "Special advantages and disadvantages of the various local anesthetics in nose and throat work."

The committee is very desirous of learning from members of the profession of any toxic effects, not necessarily fatal,

occurring in their practice, and will be greatly pleased to receive communications regarding any ill effects noted by them following the use of any local anesthetics.

All such communications will be regarded as strictly confidential, and may be sent to the chairman of the committee.

EMIL MAYER, M.D., Chairman,
40 E. 41st St., New York.
ROSS HALL SKILLERN, M.D., Philadelphia.
ROBERT SONNENSCHEIN, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE DETERMINATION OF LEAD IN THE URINE

To the Editor:—Please furnish me with details of tests for detection of lead in urine, referred to in the article of Dr. Louis I. Harris, THE JOURNAL, Sept. 20, 1919, p. 880. Kindly omit my name in answering.

A. A. P.

ANSWER.—Dr. Harris does not give the method used by him for the determination of lead. In qualitative work the following method is commonly employed:

A liter (quart) of urine, acidified with acetic acid, is evaporated to dryness and the residue fused in a crucible with a little potassium nitrate until the melt becomes white. The crucible is cooled, hot dilute hydrochloric acid added, the extract filtered, the filtrate treated with ammonia to alkaline reaction, and ammonium sulphid added. The precipitate, which contains the lead as sulphid, is washed three times by decantation with hot water; then water acidified with hydrochloric acid is added and the whole allowed to stand over night. The mixture is filtered through a small filter and the residue washed. A few drops of nitric acid are then added, drop by drop, to dissolve the lead sulphid on the filter. This filtrate is collected in a watch-glass, evaporated to dryness, and the final test made by adding a drop of water and a small crystal of potassium iodid. A yellow precipitate denotes lead.

If quantitative results are wanted, the filter containing the lead sulphid, as obtained above, is digested on the water bath with dilute nitric acid containing a little hydrochloric acid, the mixture filtered and the filter washed with a large excess of hot water. The filtrate and washings are evaporated to a small volume, a few cubic centimeters of dilute sulphuric acid are added, the solution is evaporated on the hot plate until white fumes appear, 25 c.c. of 50 per cent. alcohol are added, the mixture is allowed to stand twenty-four hours, and the precipitated lead sulphate is collected in a weighed Gooch crucible, dried and weighed.

Electrolytic methods for the determination of the lead are known also, and these are to be preferred if the amount is small. They are usually carried out in the solution obtained from the solution of the lead sulphid in nitric acid, the lead being deposited as lead peroxid and weighed as such, after drying at 180 C.

THE PRESCRIBING OF PAREGORIC

To the Editor:—Please inform me if it is necessary for a physician who prescribes paregoric in a mixture to keep that prescription on file and keep a narcotic record as prescribed in the Harrison law for narcotics.

A. I. LAWBAUGH, M.D., Calumet, Mich.

ANSWER.—Paregoric is exempt under the provisions of the Harrison law. The U. S. circuit court in the case of the *United States* v. *Oliver* held that paregoric is exempt only when legitimately used as a medicine, and that prescribing or dispensing it to satisfy the cravings of a drug addict is a violation of the law. It is, therefore, wise for physicians to prescribe paregoric only in cases in which they will be able to justify its use if called on to do so. A physician is not required to keep a record of such prescriptions, but the druggist filling them must do so.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 11-12. Sec. Regular Board, Dr. T. J. Stout, Brinkley. Sec. Eclectic Board, Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith.

CALIFORNIA: Sacramento, Oct. 20-23, Sec., Dr. Chas. B. Pinkham, Butler Bldg., San Francisco.

CONNECTICUT: New Haven, Nov. 11-12. Sec. Regular Board, Dr. Charles A. Tuttle, 196 York St., New Haven. Sec. Homeopathic Board, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Sec. Eclectic Board, Dr. James E. Hair, 730 State St., Bridgeport.

FLORIDA: Tampa, Dec. 1-2. Sec., Regular Board, Dr. Wm. M. Rowlett, Citizens' Bank Building, Tampa.

ILLINOIS: Chicago, Dec. 1-3. Mr. F. C. Dodds, Supt. of Registration, Springfield.

KENTUCKY: Louisville, Dec. 2. Sec., Dr. A. F. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 1-3. Sec., Regular Board, Dr. E. W. Mahler, 141 Elk Place, New Orleans.

LOUISIANA: New Orleans, Nov. 4. Sec. Homeopathic Board, Dr. F. H. Hardenstein, 702 Machesa Bldg., New Orleans.

MAINE: Portland, Nov. 11-12. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, Nov. 11-13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

NEBRASKA: Lincoln, Nov. 12-14. Sec., Dr. H. J. Lehnhoff, 514 First Nat'l Bank Bldg., Lincoln.

NEVADA: Carson City, Nov. 3. Sec., Dr. S. L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. Alexander MacAlister, State House, Trenton.

SOUTH CAROLINA: Columbia, Nov. 10. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Galveston, Nov. 18-20. Sec., Dr. M. F. Bettencourt, Mart, Texas.

Rhode Island July Examination

Dr. Byron U. Richards, secretary of the Rhode Island State Board of Health, reports the written and practical examination held at Providence, July 10-11, 1919. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Four candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Maryland		(1917)	85.8
Tufts College Medical School		(1917)	82.6
University and Bellevue Hospital Med. Coll.		(1918)	93.6
College of Physicians and Surgeons, Memphis		(1911)	84.7

Arizona July Examination

Dr. Allen H. Williams, secretary of the Arizona State Board of Medical Examiners, reports the oral and written examination held at Phoenix, July 1-2, 1919. The examination covered 10 subjects, and included 100 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University		(1894)	77.5
National Medical University, Chicago		(1908)	79.1
Northwestern Medical College		(1894)	83
Memphis Hospital Medical College		(1894)	79.2
Trinity Medical College		(1886)	84.5
	FAILED		
Southwestern Homeo. Med. College and Hospital		(1903)	45

North Dakota July Examination

Dr. George M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held at Grand Forks, July 1-4, 1919. The examination covered 13 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 4 passed and 2 failed. Eight candidates were licensed by reciprocity. One candidate, a graduate of Jefferson Medical College in 1917, was licensed on presentation of a certificate from the National Board of Medical Examiners. The following colleges were represented:

College	PASSED	Grad. Year	Cent. Per
Chicago College of Medicine and Surgery		(1916)	76.5
Northwestern University		(1918)	79

College		Year Grad.	Per Cent.
University of Tennessee		(1917)	75.2
Marquette University		(1919)	84
	FAILED		
Kentucky School of Medicine		(1906)	65
University of Louisville		(1905)	67.5

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University		(1912)	Illinois
Rush Medical College		(1915)	Illinois
State University of Iowa College of Medicine		(1905)	Iowa
Kansas Medical College		(1913)	Kansas
Harvard University		(1912)	Illinois
Univ. of Mich. Homeopathic Medical School		(1904)	Michigan
Hamline University		(1909)	Minnesota
University of Minnesota Medical School		(1914)	Minnesota

South Dakota July Examination

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the written and practical examination held at Deadwood, July 8-10, 1919. The examination covered 13 subjects and included 105 questions. An average of 75 per cent. was required to pass. Seventeen candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University		(1911)	87.6
Chicago College of Medicine and Surgery		(1918)	81.8
College of Phys. and Surgs., Chicago		(1896) 87.6, (1897)	82.3
Northwestern University		(1908) 79, (1918)	87.1
Rush Medical College	(1902) 86.1, 87.3, (1919) 86.6, 86.6, 89.6.		
Saginaw Valley Medical College		(1902)	86.1
Washington University		(1903)	84.1
Lincoln Medical College		(1908)	83.5
University of Pennsylvania		(1909)	86.4
Chattanooga Medical College		(1898)	88.4
Trinity Medical College		(1904)	82.8

West Virginia July Examination

Dr. S. L. Jepson, health commissioner of the West Virginia Public Health Council, reports the oral, written and practical examination held at Huntington, July 8-10, 1919. The examination covered 9 subjects, and included 90 questions. An average of 80 per cent. was required to pass. Of the 38 candidates examined, 29, including 2 osteopaths, passed, and 9, including 3 nongraduates, failed. Two candidates were granted osteopathic reciprocity certificates. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University		(1916)	91.7
Loyola University, Chicago		(1919) 80.1,	90.4
University of Illinois		(1915)	85.7
Johns Hopkins University		(1919)	85.3
University of Maryland		(1917) 83.7, (1919) 83.6,	87.1
Harvard University		(1918) 88, 89, (1919)	82.5
University of Michigan Homeo. Medical School		(1901)	87.4
Columbia University		(1918)	87.4
University of Cincinnati		(1919)	85.7
Jefferson Medical College	(1916) 85.2, (1918) 86, (1919) 85.1,		88.6
Temple University		(1918)	83.3
Meharry Medical College	(1915) 80.1, (1919) 80.7, 81, 82.1, 83.5,		88.3
Medical College of Virginia		(1918) 87.4,	91.7
	FAILED		
University of Louisville		(1910)	45.1
Eclectic Medical College		(1918)	76.6
Meharry Medical College	(1916) 65.6, (1918) 77, (1919)		76.8
Memphis Hospital Medical College		(1912)	73.6

Dr. Jepson also reports that twenty-nine candidates were licensed by reciprocity since November, 1918. The following colleges were represented:

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
George Washington University		(1910), (1912)	Dist. Colum.
Atlanta College of Physicians and Surgeons		(1913)	Georgia
Atlanta Medical College		(1914)	Georgia
Chicago Coll. of Med. and Surg.		(1914) Illinois, (1917)	Nebraska
College of Physicians and Surgeons, Keokuk		(1897)	Iowa
University of Louisville		(1892), (1911)	Kentucky
Atlantic Medical College		(1908)	Virginia
Baltimore Medical College		(1896)	Virginia
Johns Hopkins University		(1917)	Maryland
National University of Arts and Sciences		(1915)	Missouri
University Medical College of Kansas City		(1904)	Missouri
Leonard Medical School		(1906)	Virginia
American Eclectic Medical College		(1894)	Kentucky
Eclectic Medical Institute		(1902)	Ohio
Medical College of Ohio		(1897), (1907)	Ohio
Western Reserve University		(1917)	Ohio
Med. Coll. of the State of So. Carolina		(1906), (1917)	S. Carolina
Vanderbilt University		(1893)	Colorado
Medical College of Virginia		(1910), (1913), (1916)	Virginia
University College of Medicine, Richmond		(1909)	Virginia
University of Virginia		(1907, 2)	Virginia

Book Notices

MENDERS OF THE MAIMED. The Anatomical and Physiological Principles Underlying the Treatment of Injuries to Muscles, Nerves, Bones, and Joints. By Arthur Keith, M.D., F.R.C.S., LL.D. Cloth. Price, $6.50. Pp. 335. New York: Oxford University Press, 1919

In presenting the growth of orthopedic surgery as a specialty, with a view to defining its present status, the author has used an interesting method, tracing the growth of the specialty through significant achievements by certain personalities. Each chapter concerns the life and work of some great physician who initiated an advance. Beginning with the orthopedic principles of John Hunter, chapters are devoted to Hilton, Thomas, Duhamel, Sayre and many others, including in each chapter pictures and biographic notes of the orthopedic surgeons whose work is discussed. The method is thus defined:

> I have sought to guide the reader to the hospital wards, the physiological laboratories, the dissecting rooms, and private workrooms in which the great advances of orthopaedic surgery were made, and to introduce to them the "Menders of the Maimed" as they were in the heyday of life. In only this way, I conceive, can Medical History be written profitably.

The unique method of presentation, the beautiful literary style, and the authoritative character of the book make it one of significance not only to the orthopedic surgeon, but to all who are interested in the advance of medical science.

PULMONARY TUBERCULOSIS. By Maurice Fishberg, M.D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College. Second Edition. Cloth. Price, $6.50. Pp. 744, with 125 illustrations. Philadelphia: Lea & Febiger, 1919.

The great responsibility in treating tuberculosis, the author believes, rests on the general practitioner: that many cases are not hopeless, even though advanced, that institutional treatment is not the only effective method, and that careful home treatment is productive of practically the same improvement and ultimate results as institutional treatment. In discussing the clinical aspects, Fishberg emphasizes the constitutional symptoms. He gives attention both to bacteriology and to serology, as well as to the roentgen ray as aids to diagnosis; but the main reliance is placed on physical findings.

The treatment which he recommends is based on his own practice, and since it is in this particular phase of the subject that most men are interested, it may be well to recapitulate some of the views advanced. He lays considerable stress on air, food and psychic influences. A chapter is devoted to the open air treatment, in which, with diagrams and numerous illustrations, the author shows how this may be applied in the home. Climate is given a chapter, and another is devoted to institutional treatment. Under medicinal treatment it is pointed out that there is no specific for this disease, nor do we have any agent that will enhance the resistance of the tissues against the ravages of the tubercle bacilli. We do, however, have a distinct use for drugs in controlling symptomatology. The patient has no confidence in a physician who has no remedy for his ailment. As the author states, "If his medical adviser will not prescribe for him, he will seek remedies from another who is more obliging in this respect, or from an advertising quack." As has been pointed out several times, this is more particularly true of the intelligent patient than of the ignorant, for the latter distrusts his own knowledge and is more likely to place great reliance on the command of the physician.

The author discusses, under separate headings, the use of creosote, ichthyol, arsenic, iodin, mercury, the phosphites and cod liver oil. In a chapter on specific treatment he reviews the evidence thus far available on the use of tuberculin, pointing out its uses and dangers. The former he believes to be rather slight, stating that:

> Tuberculin treatment is only efficacious in intelligent patients who are under the impression that they have mastered the theoretical aspects of infection and immunity and of specific therapy from reading popular books and articles on tuberculosis. In fact, in my experience, uneducated patients hardly ever improve under tuberculin treatment because they cannot understand the benefit of fever, malaise, pain in the limbs,

nausea, debility, etc. On the other hand, intelligent patients look forward to the reaction as an indication that the tuberculin is "working on their system" and they often improve, provided infinitesimally small doses have been given.

Finally, he says, "The general practitioner should not use tuberculin at all. He can obtain the same results by the judicious use of drugs without incurring any risk."

The book is well illustrated, and an exceedingly practical work. It contains some material with which the scientist who has devoted all of his attention to tuberculosis may disagree; but, on the whole, the advice may be considered practical and reliable.

Social Medicine, Medical Economics and Miscellany

THE PHYSICIANS' STRIKE

The suggestion of a physicians' strike has usually been a facetious one. There are times, however, when even the ever patient physician becomes irritated. The *Medical Press*, London, contains the following comment relative to a recent labor agitation in Yorkshire:

Correspondence in the local journals shows that the outpatient staff of the General Infirmary at Leeds are refusing treatment to the miners on strike. When two miners attended at the outpatient department, the medical officer on duty informed them that he was on strike too. Subsequently he offered to prescribe for them, but this offer they refused, on the grounds that they had been insulted. The miners, of course, have stated their grievances in the local press, and the correspondence has grown, partly in sympathy with the miners' complaints, partly alleging that retaliation must be expected in view of the hardships the miners have brought upon the public. Meanwhile the aggrieved miners, having asked for an inquiry into the conduct of the medical staff, the secretary of the infirmary has intimated that the committee will concede the request. The incident in question is an exceptional one, and we may believe without precedent. But the miners have only themselves to blame for its occurrence. Their unlicensed attitude in regard to their work having called forth general public indignation, accompanied by hardships from which they themselves are free, it is natural that resentment against them should take an active form, just to remind them that the game they play can also be played by others. A medical man with no coal in his house because the miners have refused to work, can hardly be expected to regard with any degree of effusive complacency, miners on strike who gratuitously seek his aid at a hospital. Medical men are not exclusively humane; they are also human like other people.

PATHOMETRY OF THE INFLUENZA EPIDEMIC

At the last annual meeting of the American Public Health Association, a committee on the statistical investigation of influenza was appointed. A meeting of the subcommittee on pathometry was held at Columbia University, September 19. This committee includes a number of authorities on statistics, and hygienists representing various universities, the government services, and some insurance companies.

The committee first took up the question as to whether any mathematical function can rationally express the epidemic process. This question was answered in the negative, since it is clear that the epidemic process is by no means as simple as the controlled procedures of the physical and chemical laboratories. As it is impossible to stipulate which of the many factors in the epidemic process are supremely important, there is no definite basis from which to begin in order to produce an analytic expression for the "law" of an epidemic which will be valuable.

The second question discussed was: "Shall the pandemic explosion of 1918 be studied in relation to the course of acute respiratory disease since the preceding world-wide extension of the disease known as "influenza"? This resolved itself into a discussion as to whether the pandemic of 1918-1919 was to be considered as an isolated explosive phenomenon, or as a part of a chain of events leading back thirty years or more. Dependent on the answer to this question by epidemiologists and clinicians, the committee may take up the charting of respiratory disease for the thirty-year period since 1889.

In considering the causal relationships in influenza, the subcommittee wishes to caution all research students in the use of statistical devices ordinarily employed to assist in arriving at conclusions of a causal relation between one phenomenon and another. It is pointed out that in any phenomenon of infectious disease, there are three physical elements: (1) the invading organism or group of organisms; (2) the host or population receiving the attack, and (3) the external environment of both invader and host. These factors may be subdivided as follows:

1. The Invader:
   - (*a*) The size of the dose of infection.
   - (*b*) The frequency with which the dose or doses are brought in contact with the host.
   - (*c*) Tendency of the invader to specific localization.
   - (*d*) Infectivity of the organism or organisms (power to produce sickness).
   - (*e*) Virulence (power to produce death).
   - (*f*) Activity of invader in the presence of existing bacterial flora.
2. The Host:
   - (*a*) Opportunity for receiving dose of infective material: Density of population; transport systems; public assembly; other channels of communication between the infected and the uninfected.
   - (*b*) Natural and acquired immunity to invasion and multiplication of organism or organisms, and to poisons produced by the invader.
   - (*c*) Resistance factors: Nutrition; general physical condition; fatigue status; hygiene of environment; existence of definite bodily and mental states (injuries, effects of other diseases, intoxications, etc.); personal habits; medical and nursing care of those infected.
3. External Environment:

Temperature and humidity, separately and when acting together, and changes in these, may be expected to have some influence on infectious disease and especially on respiratory and influenzal disease. By the ordinary methods of graphically associating weather and influenza-pneumonia data no very clear idea can be formed of the relation between these two elements. Students of this phase of the causal relation problem are urged to employ proper methods of measuring the combined effects of temperature *and* humidity, and of variations in them. It is possible also that only accumulations of excess or deficiency of temperature and humidity from an "optimum" or "norm" will show correlation with influenza. Some of the points to bear in mind in these correlation studies of weather and influenza data are, it seems to the subcommittee:

- (*a*) Explosiveness or "epidemicity" of the epidemic.
- (*b*) Time distribution.
- (*c*) Aggregate of epidemic damage regardless of explosiveness or time distribution.
- (*d*) Infectivity of the organism at various stages of the epidemic wave.
- (*e*) Virulence of the organism at various stages of the epidemic wave.

As to the effect of weather conditions on the case fatality of the disease, the committee recommended that, wherever possible, mention be made on case records of prevailing weather conditions, and that such case records be studied in relation to the various weather elements and variations in them.

Care of the Eyes.—Glasses ordered for astigmatism or any compound refractive error require particularly accurate adjustment, and should be mounted preferably in spectacle frames. Children under 16 years of age should always use these frames.—W. M. Carhart, *Pub. Health*, Michigan, September, 1919.

Medicolegal

Not Liable for Malpractice of Substitute Physician

(Moore v. Lee (Texas), 211 S. W. R. 214)

The Supreme Court of Texas reverses a judgment of the court of civil appeals, which reversed one of the district court that was in favor of the defendant, and affirms the judgment of the district court, in this suit brought by plaintiff Lee to recover damages for an alleged breach of contract by defendant Moore to attend and treat the wife of the plaintiff during and after childbirth, and for alleged malpractice on the wife, during her confinement, by another physician for whose acts and negligence it was charged that the defendant was liable. The supreme court says that the plaintiff and the defendant had entered into an agreement whereby the wife of the former was to have the services of the latter, as a physician, for an agreed fee, during the approaching confinement of the wife. The defendant visited and examined her between 1 and 2 o'clock one morning, and promised to return when needed. Before 9 o'clock, the plaintiff notified him it was time to come to Mrs. Lee, when the defendant replied that, because of important business, he would be unable to come, but would send another physician, to which the plaintiff responded with a request to send him in a hurry. The defendant then telephoned to a physician whose general reputation as a physician was good, saying that he had a case to which he wanted to send him, that it was a partnership case, of which he expected to take care, and requested him to go out and look after the plaintiff's wife, and to notify him if he needed help or anything went wrong, whereupon he would either come himself or send assistance. The substitute physician reached the plaintiff's home at about 10 o'clock and attended to the delivery of the child, and there was evidence to raise the issue of injury to Mrs. Lee through his acts or negligence. However, the plaintiff expressed no dissatisfaction to him, at the time the child was delivered, and paid him on his second or third visit the full fee, which he testified he had agreed to pay the defendant, and paid nothing to the defendant. A jury trial resulted in a verdict and judgment for the defendent, which was reversed by the court of civil appeals, and Section B of the Commission of Appeals recommended that the judgment of the court of civil appeals be affirmed; but it is reversed by the supreme court, and the judgment for the defendant affirmed, as stated above.

It was immaterial to the matter of the defendant's liability for the substitute physician's negligence or lack of skill, under the issues joined, whether the defendant represented him to be his partner at the time he proposed sending him. No pleading was filed by the plaintiff alleging that he was held out as the defendant's partner, nor seeking to hold the defendant liable as a partner with the substitute physician, nor seeking any damages for any misrepresentation of his status as a partner. So the question was simply, What was the defendant's duty, under the law, when the plaintiff asked him to dispatch speedily another physician to treat Mrs. Lee? In the opinion of the supreme court, this question admitted of no answer save that the duty of the defendant was to exercise ordinary care in the selection of the physician to be sent. The opinion in *Texas Central Railroad Co.* v. *Zumwalt*, 103 Texas 607, 132 S. W. 113, declared that when a railroad company furnished an employee with a physician, the railroad company would not be held liable for the physician's negligence, unless, in treating the employee, he was the agent of the railroad company. No more could the defendant physician be held liable for the other physician's negligence or lack of skill, in the absence of facts to establish that such other physician was acting as his agent while he was treating the plaintiff's wife. From the very nature of the employment, the physician who takes the place of another must, while he alone is treating the patient, exercise his own judgment and his own skill; and he is truly an independent contractor. In the light of the long-established custom among the physicians in that community for one unable to treat all his patients to send another physician to those he was not able to attend, the defendant's statements should be construed to mean that he expected to resume charge of the case when his other engagements would permit, and expected the physician sent to be compensated for the services he would render, while he himself would be compensated for the services he would render.

Sufficient Evidence That Child Was Born Alive

(Taylor v. Cawood et al. (Mo.), 211 S. W. R. 47)

The Supreme Court of Missouri, Division 1, says that the question at issue in this case was whether or not the child of the wife of the plaintiff was born dead or alive. If it was born dead, then the mother's heirs inherited certain real estate; but, if the child was born alive, then the plaintiff inherited the real estate from the child. The physician to whose maternity hospital Mrs. Taylor was taken in a very low condition, six or seven days prior to the full expected period of her pregnancy, after she had the day before been seized with uremic convulsions, finding that her nervous condition was such as to prevent an examination without an anesthetic, made arrangements for an instrumental delivery; but Mrs. Taylor died after she had taken only a few inhalations of the ether. The physician then undertook, with all possible speed, to deliver the child, without an operation, and was successful, the child being delivered in two or three minutes. He testified that he used the methods which are known for respiration, blowing in the face, sprinkling cold water, and slapping the baby, and it breathed a few times or gurgled loud enough so that the other physicians could hear it, and the heart beat for a minute or two. That was one evidence of life. This was done while the cord was attached, in the hopes that a little circulation might start in the body; that if the mother was alive it would get a little supply of blood from her. The cord was left attached a minute or two; but, as no further evidence of life was observed, the cord was cut, and a nurse was told to take the baby upstairs where there was a plentiful supply of hot water and go through the other modes of respiration. All the physicians and nurses present at the time of the confinement testified that they either saw or heard unmistakable evidences of life in the child after the death of the mother, except that one physician said he heard a sound from the child, but did not know what caused it. The court thinks not only that a prima facie case was made by the plaintiff, but also that it was supported by substantial evidence. An attempt was made to impeach the physicians first mentioned by introducing in evidence a certified copy of the certificate of the death of the child, made by him shortly after the death occurred, to the central bureau of vital statistics, in which he stated that the cause of death was "premature birth—stillborn." In explanation, he said that he did not know very much about the death certificate, that the death certificates and birth reports were made in such a way that the physician did not give them much attention; that the death certificates were made out at the undertaker's, and once in a while, with these little fellows, they called up and asked if they could sign it; he did not remember about this one, but thought he signed it; that his office girl made out the birth reports, and errors might creep into them very easily. The trial court evidently took into consideration the testimony given as to the birth and death of the child, the certificate of death, and the explanation given, as well as all the other facts and circumstances in evidence, and on the whole decided in favor of the contention of the plaintiff that the child was born alive. Nor was much probative force to be attached to the fact that the brain, heart, lungs, kidneys, etc., of the child were not examined at the time of death. In fact, had it been done under the circumstances shown to have existed in this case, it would, to say the least, have called forth unfavorable comment. Besides, in the absence of the existence of some special reason therefor, the physicians, in such a case, would never have thought of examining those organs, which would have required the holding of a necropsy for the purpose of showing whether the child was born dead or alive. In fact, had they undertaken such a thing, under the circumstances, they certainly would have encountered a sharp rebuff at the hands of all its relations.

Society Proceedings

COMING MEETINGS

American Assn. Medical Milk Commissioners, New Orleans, Oct. 27-30.
American Child Hygiene Association, Asheville, N. C., Nov. 11-13.
American Public Health Assn., New Orleans, Oct. 27-30.
Assn. of Military Surgeons of the U. S., St. Louis, Oct. 13-15.
Clinical Congress, Am. Coll. of Surgeons, New York City, Oct. 20-25.
Mississippi Valley Medical Assn., Louisville, Ky., Oct. 21-23.
Southern Medical Association, Asheville, N. C., Nov. 12-13.
Southern Minnesota Medical Assn., Mankato, Dec. 1-2.
Southern Surgical Association, New Orleans, Dec. 16-18.
Western Surgical Association, Kansas City, Dec. 15-16.

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, Sept. 26-27, 1919

INFLUENZA SYMPOSIUM

Influenza in Children

DR. NETTIE B. POWELL, Marion: In uncomplicated influenza in infants and children, the tendency is toward a leukopenia rather than a leukocytosis, although there is a slight leukocytosis in cases of complicating pneumonia, and in general the prognosis is better in the latter cases. There is nothing sufficiently constant in the differential count to be of aid either in diagnosis or in prognosis. The general condition of these patients needs first attention. They are anemic and flabby, as though suffering from anhydremia; hence special attention must be given to the quality of the food and the quantity of water ingested.

Clinical Manifestations and Sequels in Influenza

DR. CHARLES P. EMERSON, Indianapolis: It behooves us to maintain the general health of those who come under our observation by recommending that they avoid assemblages of people, eat good food, and get plenty of sleep and lots of fresh air. Now is the time to attack the tonsils, look out for the nasal sinuses, drain the infected gallbladder and treat the chronic prostatitis.

Correlation of Bacteriologic and Pathologic Findings in Influenza

DR. E. N. KIME, Indianapolis: The influenza lesions are widespread and severe, but the lung lesions, while most spectacular, form a relatively small part of the entire picture. The morbid anatomy and bacteriologic findings vary with the stage of the disease, and depend largely on the nature of the endemic flora. Early diffuse toxic or hemorrhagic lesions are manifest in the skin, mucous membranes of the respiratory tract, serous membranes of the chest and head, and the parenchymatous tissues of the entire body

DISCUSSION

DR. F. B. WYNN, Indianapolis: I want to emphasize especially the importance of preparing patients who had the severe type of influenza for the possibilities which may arise during the coming winter. Counsel them to look out for bad tonsils or any other infection, for that is a weak spot.

DR. VIRGIL H. MOON, Indianapolis: The failure of the lung to return to normal is one of the salient pathologic features in this so-called influenza. This was demonstrated at the necropsy. In the case of persons who had lived through an acute attack and afterward died from some foreign cause, the lungs did not return to their normal condition. We found areas which macroscopically and microscopically showed the same characteristics as those of persons who died during the acute attack.

DR. CHARLES H. GOOD, Huntington: The etiology is still unknown; but with rest in bed, not too much fresh air, and a building-up treatment, the prognosis in my experience is good.

DR. CARROLL C. COTTON, Elwood: I wish to emphasize that empyema occurs frequently. It generally occurs in children who had pleuritis. The pleural cavity should be drained early by incision.

DR. G. W. MCCASKEY, Fort Wayne: Fresh air is the most important factor.

DR. GEORGE W. SPOHN, Elkhart: I do not know anything that is better than vaccine as a protective measure, if it is given properly. Study the vaccines; study the method of giving them; use a vaccine from a reliable house, and a large majority of cases of ear and throat trouble will subside.

DR. CHARLES E. REED, Culver: Our greatest effort should be prevention, not treatment. We should discourage public assemblies and urge people to keep themselves in good general health and avoid exposure. The elimination of diseased tonsils is also important. We used the Rosenow vaccine; I believe it was a large factor in preventing pneumonia and other complications, and possibly it modified the influenzal process, although it did not prevent the disease itself.

DR. A. C. KIMBERLIN, Indianapolis: In nearly all these cases on physical examination of the lungs you found two things: First, there is found rather frequently, if listened for carefully, a degree of moisture plainly recognizable and scattered throughout the pulmonary tissue. And there would also be a very marked diminution of the vascular volume. Percussion in most of these cases was of no value, but the diminished vascular volume was important.

CHILD WELFARE SYMPOSIUM

Relation of Ophthalmology to Child Hygiene

DR. JOHN RAY NEWCOMB, Indianapolis: The rôle of the ophthalmologist, the family physician, the family and the school is one and the same. Early and thorough examination of the eyes should be made by a competent ophthalmologist, and obedience to directions he may give in regard to the hygiene of the eyes and the use of corrective or remedial measures is essential. Nothing is more important to the child than normal visual function, and this means the best professional advice obtainable. The statement that a child's general health may be affected seriously, and even endangered by errors of refraction, may be questioned by some; but a study of case reports will convince one of the intimate relationship of ophthalmology to the general physical welfare of children.

Child Hygiene and the Doctor

DR. ADA E. SCHWEITZER, Indianapolis: That valuable work in child hygiene has already been done in Indiana is shown by a fairly regular lowering of our infant mortality rate for the last ten years, the lowest point (80 deaths under 1 year in each 1,000 deaths) being reached in 1915. The highest mortality was 144, in 1909. For 1916, 1917 and 1918 the rates are 85.5, 83 and 88, respectively, the increase in 1918 being largely due to the influenza epidemic together with the increased cost of living.

Relation of Otolaryngology to Child Hygiene

DR. DANIEL W. LAYMAN, Indianapolis: The past decade has shown the laryngologist active in tonsillar surgery, because the internist and pediatrician, backed by the scientific work of the pathologist and bacteriologist, have advocated the removal of tonsils which are troublesome. Today, the progressive laryngologist does not wait until the tonsils have caused a diseased condition, because he knows diseased tissue is a menace to health, rendering the child much more susceptible to respiratory and gastro-intestinal disturbances of all kinds, as well as to the infectious diseases. Reports from contagious disease hospitals over the country show that in from 80 to 100 per cent. of contagious disease cases diseased tonsils are present, and that they are nearly always present in the cases that develop complications.

DISCUSSION

DR. O. C. BREITENBACH, Columbus: Two important factors in bettering the condition of the children of the United States are: first, our standardized methods of grading children, and, second, school inspection. School inspection must be more than mere inspection: it must include a follow-up system that will carry the life-saving principles of modern medicine into the homes.

Dr. W. A. Hollis, Hartford City: Not all that is written about child hygiene is written by physicians, and not all that is read on the subject is read by physicians; nor is all the good advice on the management and rearing of children to be obtained from physicians. I am frequently surprised at the amount of information intelligent women and mothers have collected, and I am always glad to learn from them.

Mr. I. L. Miller (Office of Food and Drug Commissioner), Indianapolis: In regard to labeling poison alkalis, I do not believe that we have done our duty to our children until we have secured legislation that will secure the proper control of the distribution of these poisons, and I believe the physicians are the best people to bring about a sentiment in favor of enacting the proper law.

Dr. George W. Spohn, Elkhart: I do not believe in the universal removal of tonsils. So many mistakes are made that we should be extremely careful in our differential diagnosis. Tonsils should be removed only when it is really necessary.

Dr. Charles Stoltz, South Bend: One great trouble lies in our school inspection. This should consist of more than looking into a child's throat and finding out if it has myopia. School inspection should ascertain the conditions in the child's home, and the attitude of the community toward industrial problems.

Dr. H. O. Pantzer, Indianapolis: More care must be taken with medical records. In 99 per cent. of records only the most perfunctory reference is made to this subject, simply saying, "Has had ordinary diseases of childhood." We must do better in this respect in the future.

(To be continued)

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirty-Second Annual Meeting, held at Cincinnati, Sept. 15-17, 1919

The President, Dr. John F. Erdmann, New York, in the Chair

SYMPOSIUM ON VENEREAL DISEASE

Work of the Detention Home for Women in the Management of Venereal Disease

Dr. Palmer Findley, Omaha: In June, 1918, at Fort Omaha, measures were taken to protect the soldiers from venereal disease. After the detention home was established, so that infected girls and women could be treated properly, the percentage of venereal disease among the soldiers was greatly reduced.

Pioneering in Venereal Disease Control

Dr. A. J. McLaughlin, Sioux City, Iowa: Educational methods, such as authentic literature and lectures, are useful to bring about a demand in different communities for suppression of these diseases; but the carriers are not reached by this form of control. Law enforcement is the only method through which they can be reached; and if the law enforcement is strict enough, venereal disease can be eradicated.

Value of Detention as a Reconstruction Measure

Dr. C. C. Pierce, Washington, D. C.: The war has given us volumes of data proving conclusively that the prostitute or sex offender requires individual, correctional care to overcome the handicaps of mental inferiority, physical defects, educational neglect, and hereditary and environmental influences. The detention home has a definite place in the reconstruction program, but it must be a detention home only in the sense that individuals are detained until such time as they can be returned to society equipped to take their places as respectable and respected citizens. Merely to use a detention home for the cure and treatment of venereal diseases is to promote a vicious cycle. Unless the detained individual is given a vocational training whereby a decent economic status can be maintained, the detention home contributes to delinquency rather than corrects it.

The war-time detention house was designed primarily to meet an emergency, to protect the fighting men from venereal infections. The peace-time detention house for such an institution must be carried over with the peace-time program; it must be designed to protect the working forces—posterity—from venereal infections. The peace-time detention home must provide correctional facilities as well as medical facilities.

Detention and Treatment of Infected Women as a Measure of Control of Venereal Diseases in Extracantonment Zone

Dr. W. F. Draper, Richmond, Va.: The detention hospitals were a potent factor in controlling the spread of venereal diseases in extracantonment zones: (1) by making it possible to remove a large number of infected immoral women from the community and holding them absolutely apart from the general population for a number of months; (2) by making the chances of isolation for a considerable period of time so great as to discourage immoral women from operating in these areas; (3) by giving a practical demonstration to the community of the high prevalence of venereal diseases among immoral women, and the time and effort necessary in the treatment of these diseases, and (4) by actually removing foci of infection by medical treatment. The actual treatment of the women is believed to have been of far less importance in controlling venereal diseases in the extracantonment zones than the other factors mentioned. A period of treatment lasting only a few months is of doubtful efficacy, and serves only to embitter the patient without in any way detracting from her intention of again resorting to prostitution immediately on her release from the hospital. It is believed that the period of detention and treatment should be extended for a period lasting from one to four years, thus allowing time for more definite results as to treatment, and affording an opportunity for rehabilitation. In cases in which the mentality is so low as to preclude the possibility of a life other than one of prostitution, it would be an economy and a humanitarian act to commit such individuals to institutional care for life. The cost of the detention hospital is the most serious obstacle in the path of its development. Few communities are willing, if, indeed, they are able, to maintain such an institution. It is freely admitted, therefore, that federal aid in the establishment and maintenance of detention hospitals for women will be necessary for a considerable time to come.

SYMPOSIUM ON ADMINISTRATION OF ANESTHESIA IN OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY

Safety Factors in the Team-Work of Operator and Anesthetist

Dr. John J. Buettner, Syracuse, N. Y.: The duty of the anesthetist is not merely to administer the anesthetic agent, but also to help prepare the patient for the operation. When possible, the anesthetist should begin his work when the surgeon has decided that an operation is needed. It is advisable to have the patient in the hospital at least forty-eight hours before the operation. A full physical examination of the patient is advisable. A thorough examination of the urine should be made, and, when possible, a functional test. The examination for acetone is too often neglected. It should be made a routine practice. A full blood examination, including the clotting time of the blood, is another safeguard. It is especially in genito-urinary surgery that this preoperative care and preparation of the patient is valuable. Patients who formerly were doomed to die are now made fit subjects for surgery that affords not only relief, but oftentimes cures.

Some Adjuncts Which Promote Efficiency in the Use of Local Anesthesia

Dr. Robert Emmet Farr, Minneapolis: Elements which have influenced me in the adoption of local anesthesia are the facts that liberal amounts of procain can be used if safeguarded properly; the development of an improved armamentarium; the development of a morale on the part of my assistants and the hospital attachés which, together with the gradual education of my clientele, greatly influenced the

mental attitude of prospective patients, and an improvement in the method of handling the tissues. My experience leads me to believe that postoperative ileus and gas pains are, in the absence of infection, directly proportionate to the amount of trauma employed during the operation. Nausea, thirst, vomiting and pain are largely eliminated. When operations are performed on children under local anesthesia, restraint is necessary while the anesthetic is being introduced. My experience has been that the restraint necessary is probably less than one-tenth that required during the administration of a general anesthetic.

Surgical Barrage

DRS. CHARLES W. MOOTS and ELMER I. MCKESSON, Toledo, Ohio: A surgical barrage may be defined as the process of surrounding the surgical patient with all the skill and refinement known to specialists in the various departments of medicine and surgery during the preoperative, operative and postoperative periods. Surrounded with such a barrage, the patient may reasonably anticipate the lowest possible mortality rate, with the shortest and least uncomfortable morbidity period. The question of the advisability of nurses administering anesthetics has recently been brought up. While many nurses may be taught to administer the safer agents in uncomplicated cases in a manner highly satisfactory to the operator, yet the principle is fundamentally wrong. The administration of a general anesthetic is the giving of the most powerful and dangerous drug at the most perilous time of the patient's life. During any major operation the anesthetist may be called on to make one or several new diagnoses and prognoses, and this certainly constitutes the practice of medicine and demands unusual skill. The war has corroborated our previous observations that when nitrous oxid-oxygen was available in skilled hands, this form of narcosis is one of the best shock prophylactics. It is not remarkable that nitrous oxid-oxygen should be safer in shock and in preventing shock than other anesthetics when one recalls the fact that muscles cannot be paralyzed with it.

Postoperative Analgesia

DR. BERTHA VAN HOOSEN, Chicago: Postoperative analgesia means a painless convalescence for surgical patients. The factors in postoperative analgesia technic may be thus enumerated in the order of their importance: scopolamin-morphin anesthesia; large enemas (from 4 to 5 quarts) given in one-half hour following operation and retained; frequent minute doses of scopolamin-morphin at regular intervals after operation and continued for the first twenty-four or thirty-six hours; the use of sharp instruments during the operation, avoiding blunt dissection; sponging gently and infrequently; a comfortable posture for the patient, with an effort to secure relaxation or support as may be required for the traumatized part of the body.

Care of Bowels During Puerperal Period

DR. ROSS MCPHERSON, New York: Nine hundred women were given routine catharsis, and 911 were not. Among the 900 who had catharsis, eighty-four at some time during their convalescence developed a temperature of 100.4 F. Among the 911 to whom no catharsis was administered, fifty-three developed the same degree of temperature. While I am far from believing that there is never any necessity for administering a cathartic in the puerperium, I wish to emphasize the danger and uselessness of routine drugging, and assigning certain effects to conditions which have not been shown to be the cause of the symptoms exhibited.

Method of Placing Sutures in Immediate Repair of Perineum

DR. WILLIAM D. PORTER, Cincinnati: In simple longitudinal tears the usual method is to place the sutures transversely. I place the sutures longitudinally. The torn surfaces being well separated, the needle is carried through the mucous membrane half an inch to the left of the apex of the torn surface; then carried longitudinally under the torn surface, keeping half an inch to the left of the gutter of the tear, the needle is brought out through the skin half an inch to the left of the deepest point in the skin tear. The needle is next removed and placed on the other end of the suture, which is then carried down in a similar manner half an inch to the right of the gutter. The next stitch is placed parallel to the first, and half an inch to the outside. In a complete tear, the first stitch is carried through the skin near the mucocutaneous junction in such a manner as to transfix the end of the torn and retracted sphincter muscle; then under the torn surface parallel with, and near to, the edge of the torn rectal mucous membrane up to the apex of the tear in the septum, and transversely through the septum and down on the other side until the other end of the torn circular muscle is transfixed, and the needle brought out to correspond to the point of entrance. Succeeding sutures are placed parallel to the first.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

American Journal of Diseases of Children, Chicago

October, 1919, **18**, No. 4

*Caloric Requirements of Normal Infants and Children from Birth to Puberty. F. B. Talbot, Boston.—p. 229.
*Influenzal Croup. H. L. Lynah, New York.—p. 238.
Health Study of a Boys' School. R. M. Smith, Boston.—p. 248.
*Certain Nutritional Disorders of Children Associated with a Putrefactive Intestinal Flora. L. Porter, G. B. Morris and K. F. Meyer, San Francisco.—p. 254.
Study of the Stools in Children's Institutions showing the Incidence of Intestinal Parasitic Infections. L. R. DeBuys, New Orleans, and H. L. Dwyer, Kansas City, Mo.—p. 269.

Caloric Requirements of Normal Infants and Children.—In a series of studies made at the Nutrition Laboratory of the Carnegie Institution of Washington, D. C., on the energy metabolism of normal infants and children from birth to puberty, 108 boys and seventy girls, were investigated. The majority of the younger subjects were normal breast fed infants. These were studied at the Boston Directory for Wet Nurses. The older subjects were selected from the New England Home for Little Wanderers, all possible efforts being directed toward individuals who represented normality. The findings are presented in a series of six charts.

Influenzal Croup.—Seven cases of influenzal croup are reported in detail by Lynah. Apparently, there are four distinct types of respiratory involvement according to the location of the lesion: (*a*) laryngeal; (*b*) tracheobronchial; (*c*) bronchopulmonary or asthmatic, and (*d*) pneumonic.

Nutritional Disorders and Intestinal Flora.—From their observations the authors have been able to show (1) that children whose diet is well balanced and whose nutrition is normal have an intestinal flora consisting of fermentative and putrefactive types without preponderance of either; (2) that children fed on large quantities of cow's milk have a more complex flora made up of various types, most of which are facultative putrefactors; (3) that in children who suffer from certain of the types of alimentary intoxication with malnutrition, the intestinal flora departs in a uniform manner from the normal, and that this departure is always characterized by the establishment of bacterial type predominantly putrefactive; (4) that the return of these children to normal health is coincident with a regression of the intestinal flora toward predominantly fermentative types and a later swing to balance between the two types; (5) that such changes in the intestinal flora can be brought about in the intestine of the human infant by withdrawing animal protein and persistently feeding large amounts of lactose (from 2 to 4 ounces daily), and other carbohydrates; that the period which may be necessary to produce this variation is from ten to forty days. While feeding acidophilus cultures has in a few cases aided a more rapid establishment of aciduric flora in the baby's intestine, this influence was not very great; (6) that the progressive cessation of the symptoms of intoxication and a return of toxemic patients to

nutritional health coincides with the recognizable dominance of a fermentative flora; (7) that lactose and dextrins are the carbohydrates most effective in encouraging the rapid establishment of a fermentative flora in the intestine of infants and children. Following these investigations a system of treatment was devised and in nine cases during the last two years there has been but one fatality. The patient who died came late in the course of the intoxication. The plan calls for lavage of the stomach with a 2 per cent. sodium bicarbonate solution, and the washing out of the bowel with from 2 to 6 quarts of a 5 per cent. solution of the same salt, two to three times a day. All food is withdrawn, except that the patient is given large quantities of an iced, 7 per cent. solution of lactose with 2 per cent. of the sodium bicarbonate solution by mouth, and this is continued in spite of the vomiting. The patients suffer less if they are supplied with large quantities of fluid, and the vomiting ceases more promptly especially if the ingested fluid is kept cold. The intravenous injection of isotonic solution of glucose has been made a routine, even in those cases in which some sugar appears in the urine. If the respiratory signs of acidosis become alarming, Fischer's solution is injected into a vein in a quantity appropriate to the age and weight of the patient. The improvement in each case began at a time when it was possible to show that the intestinal flora had altered in type from putrefactive to fermentative.

American Journal of Ophthalmology, Chicago

September, 1919, **2**, No. 9

Blood Staining of Cornea. C. Maghy, London.—p. 633.
Roentgen Ray Treatment of Retinal Glioma. K. Kusama, Tokyo.—p. 636.
Ocular Complications of Dengue Fever. H. Barkan, San Francisco.—p. 650.
Operation Relegating Enucleation of Eye to Its Proper Position. T. J. Dimitry, New Orleans.—p. 653.
Test for Judgment of Distance. H. J. Howard, Peking, China.—p. 656.
Relation of Ocular Muscles and Sclera in Etiology of Myopia. S. Ochi, Kyushu, Japan.—p. 675.
Tubercle of Conjunctiva. J. A. Patterson, Colorado Springs.—p. 679.
Subconjunctival Graft of Fascia Lata. J. Whitaker, Indianapolis, Ind.—p. 681.
Hereditary Cataract in Calves. C. P. Small, Chicago.—p. 681.

American Journal of Roentgenology, New York City

September, 1919, **6**, No. 9

Bone and Joint Lesions of Yaws; Roentgen-Ray Findings in Twenty Cases. H. G. Maul, U. S. Army.—p. 423.
Pain in Lumbosacral Region Associated with Congenital Malformation of Transverse Processes of Fifth Lumbar Vertebra. A. J. Richard, New York.—p. 434.
Value of Radium In Curing Disease, In Prolonging Life, and in Alleviating Distressing Symptoms. W. H. B. Aikins, Toronto.—p. 439.
Legal Rights of Roentgenologist as a Witness, J. Friedmann, New York.—p. 445.
Photographic Measurements of Roentgen-Ray Dosage. L. P. Larkin, Ithaca, N. Y.—p. 448.
Case of Tuberculosis of Intestines with Defect at Cecum. P. M. Lund, New York.—p. 453.
Method of Fluoroscopic Examination with Army Bedside Unit. F. F. Borzell, Nantes, France.—p. 454.
Safety Pin in Lung Five Years. A. F. Tyler, Omaha.—p. 458.
Acute Infectious Arthritis Following Pneumonia. P. M. Lund, New York.—p. 457.
Practical Method for Testing Efficiency of Intensifying Screen. R. T. Morrison, Washington, D. C.—p. 458.
Roentgen-Ray Study of Visceroptosis. P. L. Ansell, Oakland, Calif.—p. 459.
Some Effects of Roentgen Rays on Certain Bacteria. M. W. Perry, Philadelphia.—p. 464.

Archives of Neurology and Psychiatry, Chicago

October, 1919, **2**, No. 4

*Therapy of Neurosyphilis Judged by Arsenic Penetration of Meninges; Methods of Treating Neurosyphilis. H. G. Mehrtens and C. G. MacArthur, San Francisco.—p. 369.
*Locomotor Disturbances in Disease of Cerebellum. I. L. Meyers, Chicago.—p. 376.
*Action of Certain Drugs on Brain Circulation in Man. T. Raphael, West New Brighton, N. Y., and J. M. Stanton, St. Louis.—p. 299.
*Study of Invalid Reaction. E. L. Richards, Baltimore.—p. 393.
Status Lymphaticus: Its Occurrence and Significance in War Neuroses. T. K. Davis, New York.—p. 414.
Study of Hysteria, Based Mainly on Clinical Material Observed in U. S. Army Hospital for War Neuroses at Plattsburg Barracks, N. Y. A. J. Rosanoff, Kings Park, N. Y.—p. 419.

Therapeutic Meningeal Irritation in Neurosyphilis.—Experiments were undertaken by Mehrtens and MacArthur to find out if the normal penetration of arsenic into the spinal fluid could be increased by an irritation of the meninges such as must occur in all of the intradural treatments. They found that irritation of the meninges by intradural injection of the patient's own serum caused a cellular reaction ranging from 100 to 2,300 cells per cubic millimeter of spinal fluid. Simple intravenous injection of 0.6 gm. arsphenamin resulted in a positive test for arsenic in the spinal fluid in 43 per cent. of the cases examined. Complete drainage of the spinal fluid did not increase the number of arsenic penetrations. Intravenous injection of arsphenamin, six hours after meningeal irritation, gave 92 per cent. penetrations, and compared with the controls gave three times as strong an average concentration of arsenic.

Locomotor Disturbances in Disease of Cerebellum.—Meyers describes the apparatus he used for studying the movements of the upper and lower limbs and details the findings in a number of cases studied. In a previous publication he advanced the theory that the essential function of the cerebellum is to inhibit, to regulate the activity of the motor cortex and of the tonus centers, probably located in the medulla. This theory seems to be supported by the graphic records here reported.

Action of Certain Drugs on Brain Circulation in Man.—On the basis of plethysmographic observation on the brain circulation in man under normal, in vivo, condition Raphael and Stanton claim that amyl nitrite causes a marked dilation of the brain vessels; epinephrin induces a primary constriction of these vessels, which is followed by a marked dilation; caffein produces no demonstrable change in the dosage employed, and pituitary extract is followed by a dilation of the brain vessels, accompanied by a distinct "leukoreaction."

Invalid Reaction.—Richards gives a summary of sixty cases and reports six of these cases in detail to illustrate some of the psychobiologic twists for which invalidism may be a substitute. The author urges that a more careful and searching examination be made in these cases, in which only psychopathic treatment will lead to favorable results.

Boston Medical and Surgical Journal

Oct. 2, 1919, **181**, No. 14

*Energy Content of Extra Foods. C. G. Benedict, and F. G. Benedict, Boston.—p. 415.
Diabetes Mellitus. S. H. Blodgett, Boston.—p. 422.
*Medical Supervision of Framingham Schools. W. B. Howes, Framingham.—p. 427.
Bedside Roentgenography with a New Portable Roentgen Ray Apparatus. The Army Bedside Roentgen Ray Unit Adapted As A Portable Apparatus For Civilian Practice. W. K. Coffin, Boston.—p. 431.

Energy Content of Extra Foods.—This paper deals with a group of materials very frequently eaten as extras, as incidental light meals, as ingredients of lunches, at picnics, spreads and on automobile tours, such as olives and olive products, sardines, nuts, potato chips, doughnuts, confectionery (such as caramels, nougatines, chocolate almonds, peppermints, etc.). In view of their extensive consumption by children, the Benedicts have also determined and report here the caloric content of a large number of candies popularly sold under the name of "penny goods," that is, sold in portions costing one cent each. They likewise include partial reports on cream cheeses, popcorn and crackers, including pretzels, and, finally, they report the average helpings of granulated sugar as measured by seventeen members of the laboratory staff, as well as weights and sizes of various lump sugars. The calories of olives range from 1.147 to 1.553 per gram. The caloric values per gram of the so-called ripe olives, range about 2.4 calories per gram, due to the extra fat. A can of imported sardines will yield not far from 500 calories, and a can of American sardines will yield from 221 to 533 calories. The high fat content of nuts accounts for their high caloric value, which runs in all cases not far from 7 calories per gram. Owing to the fat content of potato chips, their caloric value is, on the average, 5.9 calories per gram. The caloric value per gram of doughnuts varies with

the fat content, ranging from 4.4 to 5.1 calories, averaging not far from 200 calories per doughnut. The caloric value of crackers and pretzels per gram is not far from the caloric value of starch, i. e., 4.2 calories. The caloric value of caramels is somewhat over 4 calories per gram. The caloric value of chocolate coated candies for the most part runs above 4 calories per gram. Not far from 50 to 60 calories are commonly secured in penny candies for one cent. Popcorn candy has a caloric value of 4.030 calories per gram; Philadelphia cream cheese, 3.654 calories per gram; Neufchatel cheese, 2.056 calories per gram. The average teaspoonful of sugar furnishes from 29 to 35 calories.

Medical Supervision of Framingham Schools.—Of the 2,449 children examined in the Framingham schools, 408 were found to be anemic; 1,113 had enlarged cervical lymph nodes; 1,167 had hypertrophied tonsils of varying degrees; 296 had defective nasal breathing due to nasal obstruction from hypertrophied turbinates, adenoids or injury to the nose; 133 children had eyes testing 20/40 or worse; 146 had heart murmurs; 39 had functional irregularities of rhythm; 11 cases of pulmonary tuberculosis were found; 64 other children had a history and abnormal physical signs in the chest which suggested possible tubercle; 172 had bronchitis and 6 cases of pleurisy were diagnosed. Of the skin diseases, impetigo contagiosa held first place with 29 cases, with pustular dermatitis, eczema, acne, scabies, ringworm, icthyosis, following in the order named. One case of icthyosis congenita, a rare skin affection, was diagnosed. One thousand six hundred and eighty-one children had teeth needing urgent attention.

Florida Medical Association Journal, St. Augustine and Jacksonville

September, 1919, 6, No. 3

Stricture of Ureter, Report of Two Cases. J. K. Simpson, Jacksonville.—p. 55.
*Anorexia Nervosa Complicated by Vomiting and Pain; a New Point in Diagnosis and a New Method of Treatment. M. H. Smith, Jacksonville, Fla.—p. 58.
Use and Abuse of Biologics. B. L. Arms, Jacksonville.—p. 60.
Roentgen Diagnosis in Its Broader Application. L. W. Cunningham, Jacksonville.—p. 62.
Atypical Syphiloderms. J. L. Kirby-Smith, Jacksonville.—p. 63.

Study of Gastric Mucus in Diagnosis of Anorexia Nervosa.—The point in diagnosis referred to by Smith is that the microscopic study of the mucus taken from the stomach of these patients usually shows many incorporated epithelial cells if the condition is purely a nervous affection, whereas their absence suggests an organic state. In the treatment of this condition it is Smith's plan to select a well ventilated, quiet room—up stairs, if possible—leading out on an open porch; remove unnecessary wall decorations, drapery, flowers, etc.; give the stomach twenty-four hours rest from all kinds of food and medication; directing the nurse to administer one tablespoonful of very hot distilled water to the patient every hour during the day or until pain and nausea seem to be diminished; require all food kept out of sight and caution the nurse not to even use the words "pain," "food," "medicine," "nausea" or "vomiting" at any time in the presence of the patient. To safeguard against toxic symptoms and to insure the patient of a fair night's rest and sleep Smith gives first a colonic irrigation of warm distilled water and then administers from 30 to 40 grains of sodium bromid in 16 ounces of distilled water or else he introduces a rectal suppository containing from 15 to 20 drops of deodorized tincture of opium using precautions not to have a habit formed. Early the following morning the patient is made to swallow the weighted end of a modified duodenal tube, requiring him to spend some time on the right side after the tube has reached the pylorus. In about thirty or forty minutes the tube will be 1 or 2 feet in the jejunum. Smith's modification of the original duodenal tube is its great increase in length, and the end of the tube has long, fenestrated openings in it to prevent choking as the food escapes. The fact that the end of this tube is 2 or 3 feet below the stomach Smith has found to be of great value in preventing the tube from being forced back into the stomach and also the food from regurgitating should reversed peristalsis occur. Another great advantage in depositing this nourishment considerably down in the small bowel is that the stomach is given prolonged and continued rest, the presence of the tube usually not giving any sensation whatever. If the patient tolerates the tube well, it is left in place all day; on the other hand, if it annoys the patient it is removed for about four hours during the middle of the day. The extent to which artificial digestion is resorted to before introducing the various foods depends entirely on the result of analysis of the gastric contents. If all enzymes are absent, as they usually are in neurotic cases, the liquid nourishment, such as purees, animal broth, toasted or untoasted cereal gruels, is subjected to thirty minutes' digestion on a hot water bath, or other device, at about 37 C., using diluated hydrochloric acid, malt extract and pepsin. If these feedings are given about every two or three hours regularly, the patient soon regains sufficient strength to have this process discontinued and begin gastric feeding by mouth, at which time normal hunger and appetite return.

Journal of Infectious Diseases, Chicago

October, 1919, 25, No. 4

*Selective Inhibitory Action of Methylene Blue and Other Common Dyes on Growth of Meningococci. C. A. L. Binger, A. E. F.—p. 277.
*Dissemination and Destruction of Typhoid Bacilli Injected Intravenously into Normal and Immune Rabbits. R. L. Stone, Berkeley.—p. 284.
*Experimental Streptococcic Tonsillitis; Apparent Inefficacy of Streptococcic Vaccine as Prophylactic. D. G. Richey, Washington, D. C.—p. 299.
Two Instructive Outbreaks of Typhoid. G. F. Ruediger, Reno, Nev.—p. 306.
*Effect of Feeding Yeast on Antibody Production. E. P. Wolf and J. H. Lewis, Chicago.—p. 311.
*Biologic Classification of Hemolytic Streptococci. L. C. Havens, Biltmore, N. C.—p. 315.
An Epidemic of Water Borne Dysentery. G. E. Stookey, U. S. Army.—p. 331.
Protection Against Action of Ultraviolet Light Afforded to Alexin and Sensitizer by Certain Substances. F. M. Hill and C. L. A. Schmidt, Berkeley.—p. 335.
Cause of Abortion in Mares (B. Abortus Equi). C. Murray, Ames, Iowa.—p. 341.

Antimeningococcal Action of Certain Dyes.—A study by Binger of the action of safranin on suspensions of meningococci showed inhibition of their growth at dilutions between 1:1,000 and 1:10,000. This led to an investigation of the behavior of certain other common dyes both on meningococci and other pathogenic organisms, and a comparison of their inhibitory action with that of a few of the common antiseptics. Of the dyes studied, gentian violet, crystal violet, brilliant green, bismarck brown, safranin, methylene blue were found to inhibit the growth of meningococci. Basic fuchsin, vital red, fluorescein and eosin had no inhibitory action. The study of the comparative action of methylene blue on various types of meningococci and other pathogenic organisms showed that the growth of meningococci was inhibited at dilutions which failed to inhibit the growth of the other organisms with one exception. The inhibitory action of methylene blue on the meningococcus and the gonococcus, biologically related organisms, was the same. No fixed point of dilution has been established at which methylene blue inhibits the growth of different suspensions of meningococci. This varies with the number of viable organisms present in the suspensions. For a given suspension, however, the inhibitory point is constant. A study of the comparative action of methylene blue, formaldehyd, mercuric chlorid and phenol showed mercuric chlorid to exert the most powerful action, phenol the least, while methylene blue and formaldehyd exerted an equal influence intermediate between the other two. The presence of native protein of inflammatory cerebrospinal fluid did not interfere with the inhibitory action of methylene blue on the meningococci. The hope of finding a chemical therapeutic agent for the meningococcus group of infections is what prompted Binger to make this study. He suggests that methylene blue may possibly fill the requirements. It inhibits the growth of meningococci in fairly high dilutions. It is relatively nontoxic, is said to be diffusible through the choroid plexus and to have a specific affinity for nerve tissue.

Destruction of Typhoid Bacilli in Rabbits.—The observations made by Stone suggest the mechanism of bacteriolysis in the body of the immune animal, namely: Typhoid bacilli disappear more quickly from the organs of immune animals than from normal animals. Macerated organs taken from immune animals, cut sections, or their extracts are not bactericidal even on the addition of fresh immune serum. Typhoid immune serum is nonbactericidal for typhoid bacilli in vitro. Fresh normal serum is highly bactericidal for typhoid bacilli in vitro. Fresh immune serum in vivo, has apparently a high bactericidal power. Fresh normal serum in vivo has no protective power. This would seem to indicate that the destruction of typhoid bacilli in the immune animal is due either to some interaction between the tissue cells and plasma in vivo, or to some other factor which has thus far been overlooked.

Experimental Streptococcic Tonsillitis.—During investigations of 155 human volunteers to study the epidemiology of influenza, sixteen different individuals developed tonsillitis apparently due to hemolytic streptococci. All cases of tonsillitis occurred in men receiving crude nasopharyngeal washings and bronchial secretions from early, acute, typical, uncomplicated influenza patients—with exception of six cases in which the common donor had acute tonsillitis; no cases of tonsillitis occurred in those into whose nares were instilled filtered nasopharyngeal washings and bronchial secretions from influenza donors. The causative organisms of the tonsillitis were very similar to the hemolytic streptococci isolated from the nasopharyngeal washings and bronchial secretions of the donors of the respective groups. Three of the cases of tonsillitis developed in persons who had received, one month previously, a vaccine containing, in addition to other organisms, three presumably adequate doses of hemolytic streptococci.

Effect of Feeding Yeast on Antibody Production.—According to Wolf and Lewis the feeding of yeast has no stimulating effect on the production of antibodies to sheep blood in rabbits. The production of antibodies was even less than in controls. There is no evidence of any effect of yeast on the gastro-intestinal tract of rabbits.

Biologic Classification of Streptococci.—By means of agglutination tests Havens establishes three distinct groups of the hemolytic streptococci, constituting 93 per cent. of a series of 292 strains. The first group is much the largest (47 per cent.), the second group contains 19 per cent., and the third group, 27 per cent. The remaining twenty-two strains, or 7 per cent. of the series, evidently constitute a heterogeneous group, possessing different biologic characteristics. Diagnostic serums can be produced for each group. A protective serum for mice against each of these three groups has been demonstrated. Each serum is specific for its own group, furnishing no protection against other groups.

Laryngoscope, St. Louis

September, 1919, **29**, No. 9

Present Status of Teaching of Deaf. M. A. Goldstein, St. Louis.—p. 503.
Bone Conduction of Sound in Cetacea and Its Relation to Increased Bone Conduction in Human Beings. J. D. Kernan, Jr., New York.—p. 510.
Laws of the Hearing Centers and Application of These Laws. J. F. Callahan, Brockton, Mass.—p. 522.
Clinical Study Based on Cases Seen in Otolaryngologic Service, U. S. Army General Hospital No. 14, Fort Oglethorpe, Ga. T. J. Harris, New York.—p. 540.
Tight Strictures of Esophagus in Children, Due to Lye Burns. G. F. Keiper, Lafayette, Ind.—p. 548.
Two Cases of Fractured Skull: With Secondary Mastoiditis, Meningitis, and in One Case, Brain Abscess. J. M. Smith, New York.—p. 552.
Interesting Symptoms in Connection with Case of Brain Abscess, Operation and Recovery. J. W. Bowers, New York.—p. 558.

Medical Record, New York

Sept. 27, 1919, **96**, No. 13

Organotherapy in Certain Diseases and Conditions of Childhood. E. B. McCready, Pittsburgh.—p. 529.
Present Aspects of Endocrinology. A. W. Lescohier, Detroit.—p. 532.
Medical Treatment of Goiter. G. Ryan, Des Moines.—p. 534.
Curative Versus Symptomatic Treatment of Exophthalmic Goiter. C. E. de M. Sajous, Philadelphia.—p. 536.
Medical Social Service in Rehabilitation. W. H. Sheldon, New York.—p. 541.
Furunculosis of External Auditory Canal. H. B. Blackwell, New York.—p. 543.
National Organization of Rehabilitation of Disabled in Italy. V. Putti, Bologna, Italy.—p. 544.

Military Surgeon, Washington, D. C.

September, 1919, **45**, No. 3

Abstract of Report Professor Rubner Made in the Reichgesundheitsrat, Dec. 20, 1917.—p. 237. To be Continued.
Medical Work in British Armies in France. G. C. Shattuck, Boston.—p. 248.
A Base Hospital Postgraduate Course. C. F. Tenney, U. S. Army.—p. 257.
Orthopedic Service in British General Hospitals. R. B. Osgood, Boston.—p. 262.
Report of Intensive Antityphoid Campaign in Southwestern Germany; Analysis of Data on Seventy-One Typhoid Carriers Under Observation by Laboratory at Trier, Germany. P. A. Schule, U. S. Army.—p. 268.
War Dermatology in France and Preventive Measures Taken. F. C. Knowles, U. S. Army.—p. 285.
Methods of Handling Venereal Disease at Camp Dix, N. J. C. H. D. Shivers, U. S. Army.—p. 293.
Case of Cerebellar Abscess Following Shell Wound of Skull and Showing No Symptoms for Period of Five Months. F. T. Hill, U. S. Army.—p. 305.
One Phase of the Mosquito Work Connected with Army Camps in 1918. C. S. Ludlow, Washington, D. C.—p. 313.
Detection of Carriers and Missed Cases of Diphtheria in Embarkation and Debarkation of Troops. E. H. Schorer and A. S. Ruddock, Hoboken, N. J.—p. 319.
Hospital Train Service in the A. E. F. E. M. Colie, Jr., U. S. Army.—p. 328.

Missouri State Medical Association Journal, St. Louis

October, 1919, **16**, No. 10

Fibroid Tumors; Suggestion for Their Control. H. E. Pearse, Kansas City, Mo.—p. 323.
*Conditions Other Than Syphilis Giving Positive Wassermann. M. O. Biggs, Fulton, Mo.—p. 326.
Interruption of Pregnancy at Term. W. H. Vogt, St. Louis.—p. 329.
*Extracirculatory Factors in Angina Pectoris. P. T. Bohan, Kansas City, Mo.—p. 334.
Medical Problems in Future. J. C. Morfit, St. Louis.—p. 337.
Toxemia. O. B. Hall, Warrensburg, Mo.—p. 340.
Two Cases of Alleged Duke's Disease with a Vesicular Eruption. J. I. Tyree, Joplin, Mo.—p. 342.
*Oak Pollen Anaphylaxis; Report of Case. H. L. Kerr, Crane, Mo.—p. 343.

Positive Wassermann Reaction in Hyperthyroidism.—Biggs calls attention to the large percentage of hyperthyroid cases in State Hospital No. 1, Fulton, Mo., giving a positive Wassermann in which it was impossible either from clinical history, physical examination or inqury into the family records, to establish any syphilitic infection or taint. The patients were insane, with two exceptions, and their cases had been diagnosed under the head of "thyroigenous psychosis." Those individuals all became unmanageable to a greater or less degree at their respective homes, necessitating their confinement in an institution for the insane. The psychosis of each, in the main, was characterized by wild delusions, irritability which sometimes developed into acute excitement, slow speech and deliberate mentation, absence of suicidal or homicidal tendencies, lassitude and indifference to surroundings and apparent feeblemindedness in some. There was in these cases a total lack of the symptoms which are manifested in a psychosis which results from syphilis infection, either acquired or inherited. The physical signs were such as one would find in the average case of this type. In most of the cases an exophthalmic state was found to exist with marked tachycardia and other symptoms which accompany conditions of this kind. In some of the cases the enlargement of the thyroid was more lateral and varied in size to a great extent. The changes in the skin, teeth, blood, and temperature of the body, are typical of this class of cases. The prevailing mental tone associated with the disease was fear and apprehension, frequently associated with hallucinations of hearing and vision; voices were heard saying disagreeable things and with these hallucinations occurred anxious and agitated states. A brief case history of twelve patients is given.

Extracirculatory Factors in Angina Pectoris.—Three cases are reported by Bohan as evidence of causes of angina out-

side the cardiovascular system. The first case, one of severe angina, indicates that heart strain and reflex disturbance from irritation of the fifth nerve was either the sole cause or an important contributing factor. Irritation of the fifth nerve as a possible factor in angina, is illustrated by the second case. The third case indicates that infected tonsils, apical abscesses, neuritis in the left shoulder and gallstones were possible factors.

Oak Pollen Anaphylaxis.—Annually for the last nine years, within a few days of the first of April, Kerr's patient became ill with symptoms of hay-fever, irritation and injection of the conjunctiva with excessive lacrimation, sneezing, etc. After the first week, a papular eruption appeared on the anterior surface of the neck, elbows, groin and popliteal spaces. In about a week the papules coalesced, forming a weeping eczematous condition, which persisted very obstinately for about four weeks. During this time a considerable bronchitis and some very slight symptoms of asthma appeared, and he was incapacitated for school work. Superimposed on all this there was a bacterial infection which was followed by a furunculosis which manifested a predilection for the region of the groin and buttocks. It was evidently an anaphylactic condition. A positive reaction was obtained from oak pollen. The condition cleared up quickly when the patient got away from the oak trees among which he lived.

Modern Hospital, Chicago

September, 1919, **1**, No. 5

Romance of Sanitary Science. J. A. Tobey, Trenton, N. J.—p. 373.
Disability by Age and Occupation. B. Emmet, New York.—p. 379.
Jewish Health Work. H. J. Moss, Baltimore.—p. 385.
Traumatic Hernia, So-Called Among Railway Employees. C. W. Hopkins, Chicago.—p. 389.
Anilin Poisoning; Diagnosis and Treatment. R. P. Albaugh, Cleveland.—p. 398.
Medical Benefits and Medical Profession Under Workmen's Compensation Laws. C. Hookstadt, Washington, D. C.—p. 399.
How Industrial Medicine is Extended Through Mutual Benefit Associations. C. H. Lemon, Milwaukee, Wis.—p. 406.
Surgeon in Relation to Public Utilities. C. M. Harpster.—p. 410.
Influence of Season on Prevalence of Epidemic Diseases. C. V. Craster, Newark, N. J.—p. 425.
Value of Public Health Nurse to Community. H. R. Stewart, New York.—p. 429.
Mentality of Convalescence. E. A. Bott, Ontario, Canada.—p. 438.
Social Service for the Chronic. S. Wachsmann, New York.—p. 444.
Stammering and Modern Medicine. E. Tompkins, Pasadena, Calif.—p. 448.
Repeated Blood Pressure Readings As Conservation Measure. L. M. Bowes, Chicago.—p. 455.

Southern Medical Journal, Birmingham

September, 1919, **12**, No. 9

*Neutrophilic Index and Administration of Tuberculin. W. J. Durel, New Orleans.—p. 517.
Secondary Dilatations in Chronic Myocarditis. A. G. Brown, Richmond, Va.—p. 521.
*Plain Human Serum Treatment of Pneumonia. J. H. Cannon, Charleston, S. C.—p. 523.
Bronchopneumonia in Adults. L. J. Lindsey, Covington, Tenn.—p. 526.
Conservation of Mental Energy. F. J. Farnell, Providence, R. I.—p. 530.
Prevention of Spit Borne Diseases. E. G. Williams, Richmond, Va.—p. 536.
Early Recognition of Mental Disease. L. E. Bisch, Asheville, N. C.—p. 538.
Preventive Medicine as Applied to Mental Deficiency in Mississippi. T. H. Haines, Jackson, Miss.—p. 541.
Mental Hygiene. J. M. Buchanan, Meridian, Miss.—p. 544.
*Fate of Bone Graft. W. Campbell, Memphis.—p. 549.
Traumatic Head Surgery. C. W. Roberts, Atlanta.—p. 556.
Ureteral Calculus. G. R. Livermore, Memphis.—p. 558.
Acute Unilateral Hematogenous Nephritis. Report of Case. J. M. Maury, Memphis.—p. 561.
Blood Transfusion: Comparison of Methods. A. G. Brenizer, Charlotte, N. C.—p. 563.
Dead Teeth. J. Novitzky, San Francisco.—p. 568.
Deviated Septum. R. W. Hooker, Memphis.—p. 574.

Neutrophilic Index in Diagnosis of Tuberculosis.—Polymorphonuclear neutrophil leukocytes with two or more separate lobules, absolutely apart and not connected by an isthmus band, are more "matured" and are endowed with a better phagocytic and a greater antibody action than the polymorphonuclear neutrophil leukocytes with one lobule. In cases of tuberculosis where tuberculin is administered, Durel recalls there is always an increase of polymorphonuclear neutrophil leukocytes with one lobule after the injection of a "tonic" dose of tuberculin. This is generally followed in a few days by a corresponding increase of polymorphonuclear neutrophil leukocytes with two or more distinct and separate lobules. Cases where tuberculin reactions are frequently repeated always show a persistently high neutrophilic index, i. e., a high percentage of polymorphonuclear neutrophil leukocytes with one solid lobule. These cases also always show an increase of moisture over the tuberculous lesions. This increase of moisture is accounted for by the overcrowding of polymorphonuclear neutrophil leukocytes about the tuberculous foci, the pressure of the cells against each other producing a pneumonic serum exudate. Durel emphasizes again that the predominance of one lobule polymorphonuclear neutrophil leukocytes, associated with an increase of moisture (moist râles) over the tuberculous lesions, and following a reaction to tuberculin or severe exertion, clears up a doubtful condition often seen, but for which no tangible reason could be given nor accountable cause assigned.

Normal Human Serum Treatment of Pneumonia.—Cannon reports a case of pneumonia in which he injected 30 c.c. of serum obtained from a donor who had not had pneumonia or influenza. After obtaining a negative Wassermann and finding the blood of the donor and the recipient compatible, about 75 c.c. of blood was drawn into a sodium citrate solution, and after allowing it to settle overnight in the refrigerator, the serum was pipetted off and 30 c.c. were given to the patient by the gravity method. In about an hour he had a rather severe chill, rise of temperature to 104 F., associated with a severe coughing spell; he became very nervous and cyanotic (probably from the exertion of coughing) and the pulse became very rapid. This was followed in an hour by a drenching sweat and an improvement in all symptoms. Within five and one-half hours after the injection the temperature had reached normal, pulse 102, and respirations 24. In the case cited the fact that the patient had had influenza and still had the cough he developed with that disease Cannon suggests that it is possible at least that it may have been associated with the Type IV infection which he had, although clinically the case was one of pure lobar pneumonia.

Fate of Bone Graft.—Campbell is of the opinion that in adolescents and young adults, grafts are more vigorous and apparently act as a living, integral part, showing no disintegration, but a gradual increase in size and thickness. Spinal grafts in young children, and probably in adults, are absorbed. The graft may be inert or very feebly osteogenistic but mechanically perform the function for which it was employed, as in the neck of the femur (dense into spongy bone).

Southwest Journal of Medicine and Surgery, El Reno

September, 1919, **27**, No. 9

The Bat; Mosquitoes' Natural Enemy. C. A. R. Campbell, San Antonio.—p. 195.
Health Insurance. F. H. Clark, El Reno, Okla.—p. 207.

Southwestern Medicine, El Paso, Texas

September, 1919, **3**, No. 9

Company Physician's Contract. H. A. Reese, Bisbee, Ariz.—p. 1.
Need of a Standardized Physical Examination for Employees in Arizona. R. J. Stroud, Gleeson, Ariz.—p. 4.
Hernia from An Industrial Standpoint. G. A. Bridge and W. M. Randolph, Bisbee, Ariz.—p. 10.

Surgery, Gynecology and Obstetrics, Chicago

September, 1919, **29**, No. 3

*Treatment of Hour-Glass Stomach. A. J. Walton, London, England.—p. 213.
Treatment of War Wounds of Joints. P. Duval, Paris, France.—p. 222.
*Treatment of Metastatic Carcinoma of Spine by Deep Roentgentherapy. G. E. Pfahler, Philadelphia.—p. 236.
*Treatment of Uterine Cancer by Radium. H. H. Janeway, New York.—p. 242.
*Case of Secondary Melano-Epithelioma of Bladder. C. G. Richards, Rochester, Minn.—p. 266.
*Sacral Suspension of Uterus for Relief of Pathologic Mechanical Retroversion and Descensus. J. V. Young, New York.—p. 267.

Case of Megaduodenum In An Infant Two Months of Age. F. G. Dubose, Selma, Ala.—p. 278.
*Experimental Study of Use of Detached Omental Grafts in Intestinal Surgery. W. L. Finton, Jackson, Mich., and M. M. Peet, Ann Arbor, Mich.—p. 281.
*Futility of Bridging Nerve Defects by Means of Nerve Flaps. B. Stookey, U. S. Army.—p. 287.
Methods of Closing Fecal Fistulas. P. Lockhart-Mummery, London, England.—p. 312.
*New Sign of Fecal Impaction. R. Finochietto, Buenos Aires, Argentine.—p. 314.
*Foreign Body in Urinary Bladder. B. H. Caples, New York.—p. 315.
*Methods of Tracheotomy Without Loss of Blood. D. Guthrie, Sayre, Pa.—p. 316.
*Etiology and Treatment of Cystocele. J. C. Neel, San Francisco. —p. 320.
*Improved Method for Sterilizing Catgut Sutures. C. H. Watson, Brooklyn.—p. 323.

Treatment of Hour-Glass Stomach.—It is Walton's custom to excise the ulcer, to occlude the pylorus and to perform a posterior gastro-enterostomy. With these methods, which have been carried out in over eighty cases, much more satisfactory results have followed. Hour-glass constriction may be met with in all stages. Sometimes the ulceration is the chief factor, the stenosis is slight, and there are no symptoms of mechanical obstruction. In such instances, the treatment is that of a simple ulcer on the lesser curvature. Ten case histories are presented.

Metastatic Carcinoma of Spine.—Pfahler claims that deep roentgentherapy will bring about a healing process in deep seated carcinoma. Metastatic carcinoma of the spine is not a superficial disease. It is not Pfahler's intention to recommend roentgentherapy in the treatment of such advanced carcinoma. Pfahler also encourages the use of the roentgen rays in the early treatment of carcinoma, claiming that a favorable and curative effect can be produced on carcinomatous tissue, even in an advanced stage. In all of the cases of metastatic carcinoma of the spine, which Pfahler reports, the disease was of the breast. Pfahler says that one cannot expect the patient to make a complete, permanent recovery, for ultimately the disease is apt to show metastasis, particularly in the areas not treated. However, with the clinical and microscopic proof of the destructive action on malignant tissue followed by a healing process, and with the experimental proof of a decrease in the malignancy of cancer tissue which has been exposed to the roentgen rays and a decrease in its capability of inoculation, Pfahler recommends most strongly the use of deep roentgentherapy both as ante-operative treatment to be followed immediately by operation and then postoperative treatment, given after the proper interval, which should be four weeks after the ante-operative treatment.

Radium Treatment of Uterine Cancer.—The cases reported by Janeway in which radium therapy was used, are, briefly, as follows: Carcinoma of the cervix, seventeen cases, twelve clinically cured to date, from three and one-half years to six months after treatment; recurrent carcinoma of cervix, four cases: two clinically cured, sixteen and twenty-five months after treatment, one improved; carcinoma of fundus, four cases: two improved for periods of two years, two clinically cured, fourteen and twenty-one months after treatment; carcinoma of external genitals, five cases: three clinically cured to date, from twenty-one to sixteen months after treatment was begun: one improved, one unimproved.

Secondary Melano-Epithelioma of Bladder.—Richard's patient had pigmented moles irregularly distributed over the entire body. For the past five or six years, he had noticed that a rather large mole situated on the right side of the abdomen near the umbilicus had a core of granular débris which could be expressed, and two months previously it had begun to enlarge and had a tendency to bleed. Because of the bleeding the patient consulted his physician who excised the growth. Histologic examination revealed melano-epithelioma. Further surgical advice was sought, and the examination was negative, except for slight enlargement of the inguinal lymph nodes. The urinary findings were negative. A gland removed from the groin was found to be malignant in character, and therefore all the lymph glands in both groins and Scarpa's triangle were removed; the external saphenous vein was ligated. While the patient was convalescing from the operation radium treatment was begun, and was continued at frequent intervals. Eight months later another small gland in the inguinal region was discovered, which proved to be of the nature of those previously removed. Ten months later increased frequency of urination and diminution in the size of the stream, and nocturia were noticed. The urine contained a number of erythrocytes and pus cells. On cystoscopic examination multiple areas of black rounded tumors, varying in size from 2 to 5 cm. were found on the right base of the bladder anterior to the right meatus. On the left wall two of the tumors had pedicles; the others were sessile. As soon as the bladder condition was discovered, intravesical radium treatment was instituted. To the present time 400 mg. hours have been given. At the last cystoscopic examination no material change was noticeable, except, perhaps, a slight increase in the size of one or two of the tumors.

Sacral Suspension of Uterus.—Young's conception of the indicated surgery in uterine displacement cases is as follows: In nullipara, for physiologic retroversion, round ligament shortening; for pathologic mechanical retroversion and descensus, sacral suspension and, if needed, round ligament shortening; when there is a conical long cervix, the trachelo-plastic operation of Sturmdorf. In multipara, the restoration of all birth trauma; dilatation and curettage if indicated; for the hypertrophied infected lacerated cervix, the trachelo-plastic operation for cystocele, the restoration of the vesico-vaginal endopelvic fascia by the method of Rawls; for rectocele, the restoration of the rectovaginal endopelvic fascia, and the muscular interposition perineorrhaphy. He describes his uterosacral ligament shortening operation in detail.

Omental Grafts in Intestinal Surgery.—Finton and Peet find the use of detached omental grafts preferable to fixed grafts, except in the presence of general infection. They may be used on any abdominal organ. The indications are to replace lost portions of peritoneum; to straighten suture lines; to prevent adhesions; to check hemorrhages; to occlude the pylorus; to cover the stump of the cystic duct or fallopian tube and to reinforce the peritoneum in threatened perforations. The technic is simple and may be performed with little trauma and in a minimum period of time. In the absence of infection the thin graft survives at least six months practically unchanged.

Futility of Bridging Nerve Defects with Nerve Flaps.—In Stookey's opinion the repair of nerve defects by means of nerve flaps has not been definitely supported clinically, as evidenced by a critical study of the reported cases. Experimentally, it has been shown that nerve flaps do not serve as conducting paths for the down growing neuraxes. Nerve flaps whether central or peripheral are merely degenerated partial nerve segments. Continuity and union of neuraxes does not take place at the point of suture. By the formation of nerve flaps from the central stump a portion of the nerve from which neuraxes must grow is removed. Distal as well as central flaps may sever muscular branches. By reversing the flaps they are taken out of their field. Thus the down-growing neuraxes are prevented from reaching the muscles through these muscular branches even were regeneration to take place. For these reasons the nerve flap method to bridge nerve defects should be discarded in peripheral nerve surgery.

New Sign of Fecal Impaction.—The sign described by Finochietto is the auditory translation of the Gersuny sign. It is elicited as follows: Over the chosen area the funnel shaped end of a French stethoscope is applied. Over the shell end is applied the observer's ear, holding the instrument lightly with the fingers. The abdominal wall is depressed a few (from 10 to 40) millimeters with the stethoscope, and then the pressure is suddenly released. During the withdrawal of the stethoscope is heard a large moist râle if the sign is positive. Sometimes this is heard not only during the release of pressure, but also during its appli-

cation. Sometimes it is necessary to change frequently the place of the funnel in looking for this sign before it is found. Finochietto has found the sign positive in every patient with fecal impaction.

Foreign Body in Urinary Bladder.—In order to remove a paraffin pencil from the bladder without operation, Caples injected into the bladder 125 c.c. of a solution of 33.33 per cent. gasoline in paraffin oil at 110 F. Six subsequent injections, each of 125 c.c. at 110 F., were given. These were retained for intervals varying from two to five hours. The entire treatment covered a period of three days, and the total time of exposure to the solvent was seventeen hours. The urine and solvent were collected after each injection and by chilling them the paraffin was precipitated in decreasing amounts down to the fifth specimen. As the sixth and seventh gave no precipitate, the injections were discontinued. In the meantime, the patient's symptoms abated rapidly, and two days after his last injection his condition was normal. One week later on cystoscopic examination the bladder was normal and no trace of paraffin could be found.

Tracheotomy Without Loss of Blood.—Guthrie makes an incision in the midline of the neck from 1⅓ to 1¾ inches long. The incision must end one-half inch above the sternal notch to avoid the arcus of the anterior jugular veins. The skin and the superficial fascia are incised and the wound held open by a pair of catspaw retractors which should not be more than 1 inch in breadth. The parallel branches of the anterior jugular veins escape injury if the incision is made in the midline of the neck because they lie to either side of it. The sternohyoid and sternothyroid muscles are separated by blunt dissection. If care can be exercised during this step of the operation, the muscles can usually be separated without injury to the thyroid ima beneath. The retractors are reset. The left blade holds aside the skin, the fascia and the two muscles; the right blade holds the skin, fascia, the muscles and the thyroid ima vein. This exposes the trachea. It is incised, the head is straightened, and the tracheotomy tube inserted. This method has been employed successfully fourteen times in all types of cases.

Etiology and Treatment of Cystocele.—Neel draws down the cervix and makes a deep transverse incision just below the bladder wall, through the vaginal mucosa and the underlying fascia. The proximal flap is caught by forceps, care being taken to include the fascia; the dissection is carried between the muscle wall of the bladder and the fascia to the urethra; a median incision is then made, the bladder is dissected free of the cervix and the fascia and displaced upward to its normal position. This section is carried out by a small piece of gauze over the finger, the pressure being applied chiefly over the fascia and edge of bladder. The fascial and mucosal edges are then caught separately by clamps and the separation begun by sharp dissection, care being taken to locate the proper layer in order to preserve the entire fascia; by blunt dissection the separation is carried well up to the pubic bones on either side. The remaining steps of the operation are the same as those employed in the treatment of hernia.

Sterilizing Catgut Sutures.—The only logical way in Watson's opinion in which sterility of suture can be obtained and maintained throughout the process of preparation is to sterilize the sutures in their ultimate storing fluid after sealing the tubes. The perfection of such a method constituted the problem studied by him. Representative sizes of catgut sutures corresponding to those usually employed in surgical practice were heavily infected with three different species of sporulating bacilli, this producing a more massive and resistant bacterial infection of the gut than would occur even under the most unfavorable conditions. With toluol as a tubing or storing medium the sutures were subjected to a temperature of 165 C. for five hours after the tubes had been sealed. The sutures were removed from the tubes and tested for the presence of living bacilli by appropriate bacteriologic methods. The fact that none of the sutures, after having undergone this sterilizing process showed the presence of any viable organisms would seem to prove the complete efficiency of this method of sterilization.

FOREIGN

Titles marked with an asterisk (*) are abstracted below.

British Medical Journal, London

Sept. 20, 1919, **2**, No. 3064

International Control of Drugs of Addiction. W. J. Collins.—p. 369.
Nature of Rabies and Antirabic Treatment. D. Semple.—p. 371.
Acute Diffuse Peritonitis: Twenty-One Cases. B. Hughes.—p. 373.
*Fifteen Cases of Liver Abscess. P. Talbot.—p. 375.
Treatment of Uterine Fibroids by Roentgen Ray. J. D. Harris.—p. 376.
Work of a Venereal Disease Clinic. O. L. Rhys.—p. 376.
*Case of Primary Sarcoma of Liver. J. S. Morrow and W. H. McKinstry.—p. 378.
Occurrence of Clubbed Fingers in Healthy Persons as a Familial Peculiarity. F. P. Weber.—p. 379.
Ossifying Sarcoma of Vastus Externus. K. C. Jaidka.—p. 379.
*Primary Carcinoma of Ovary at Age of 11. C. A. S. Ridout.—p. 380.

Treatment of Liver Abscess.—In Talbot's opinion the majority of these cases can be treated successfully by aspiration with an ordinary 20 c.c. glass serum syringe. It does not appear to be necessary even to withdraw all the pus. Once the tension in the abscess cavity is relieved, the emetin carrying plasma can pass through the walls of the abscess cavity and exert its lethal effect on the amebas present there. After aspiration every patient was given a course of hypodermic injections of emetin hydrochlorid, 1 grain daily for one week and then on alternate days until 12 or 14 grains had been given. Whenever possible each patient was given 1 grain of emetin a few hours before operation, so that the first serum to flush the walls of the abscess should be carrying emetin. In addition to the fifteen cases of proved liver abscess Talbot saw seven or eight cases of hepatitis following dysentery, some of which were probably in an early suppurative stage and which cleared up rapidly with emetin.

Primary Sarcoma of Liver.—The symptoms in the case reported by Morrow and McKinstry were as follows: A man, aged 42, was admitted to the hospital in a condition of advanced emaciation. He stated that his health had been good until a year previous, when he began to feel pain in the stomach about half an hour after taking food, and he had a constant sense of discomfort during the intervals between meals. Flatulence was a prominent feature, but there had never been any vomiting. There was no noteworthy constipation. There had been a steady progressive loss of weight. The abdomen was distended by a large smooth solid tumor, extending from the costal margin to the brim of the pelvis; at its lower edge a distinct fissure could be felt in the middle line. There was some bronchial catarrh, with a persistent irritating cough. The urine was normal. A blood count showed only a slight secondary anemia (red cells, 4,000,000; hemoglobin, 70 per cent.), total white cells, 10,000 and differential white count normal. A Wassermann test was negative. The patient gradually sank, and died on the fourth day after admission. On opening the abdomen the liver was seen to have a mottled appearance and to be enlarged greatly, extending on both sides as low down as the iliac crests. The surface of the liver presented a large number of grayish white areas of new growth, some of which were about the size of a pea, while others were larger, umbilicated, and slightly raised above the surface. The general "mottling" appeared to be due to the coalescence of these nodules, forming large grayish patches which were little, if at all, raised above the surface. In the gastrohepatic omentum and in the mesentery slightly enlarged lymph glands could be felt, and those about the head of the pancreas were particularly large and matted together. The lungs showed numerous small whitish patches scattered over the surface. On microscopic examination the growths from the liver, lungs and lymph glands were found to present the same histologic features, those of an alveolar sarcoma. In view of the facts, first, that no evidence of a growth could be found in any of the other abdominal organs, and, second, of the enormous size of the growth in the liver, it was inferred that the tumor was a primary growth in the liver.

Primary Carcinoma of Ovary at Age of Eleven.—The tumor in Ridout's case weighed 2 pounds 14 ounces, and was about 8 inches in its long diameter. The pathologic report showed the presence of carcinoma cells in a scanty stroma.

Edinburgh Medical Journal

September, 1919, **33**, No. 3

*Wound Shock and Its Treatment; Cases Observed in No. 3 Mobile Laboratory, France. J. E. McCartney.—p. 157.
Field Ambulance in Gallipoli, Egypt, Palestine, and France. J. Young.—p. 173.
Case of Division of Posterior Nerve Roots of Brachial Plexus. M. Cotterill.—p. 187.
Thyroid Hyperplasia. C. M'Neil.—p. 189.
Freudism. T. A. Ross.—p. 195.

Wound Shock and Its Treatment.—McCartney summarized his observation as follows: Injury to muscle tissue causing a traumatic toxemia is one of the main features causing secondary shock. Other probable secondary factors are hemorrhage, cold, fatigue, pain and lack of food. The result of shock is to cause a marked lowering of blood pressure, and the consequent anemia affects especially the nerve centers. In resuscitation work the treatment of three phenomena has alone yielded successful results, namely: (*a*) Lowering of body temperature; (*b*) lowering of blood pressure; (*c*) diminution of blood volume. The author emphasizes that it is the cases of hemorrhage combined with little shock which form the successes in resuscitation work, and that the treatment of acidosis by intravenous injection of sodium bicarbonate has little or no practical value in cases of shock.

Japan Medical World, Tokyo

Aug. 31, 1919, 298

*Resistance of Ascaris Eggs. Yoshida and Hotta.
Prevention of Abortion, Especially the Customary Abortion. Taniguchi.
*Efficacy of Epinephrin in the Treatment of Night-Sweats. Takaki.

Resistance of Ascaris Eggs.—One of the most interesting things discovered by Yoshida and Hotta was the fact that the eggs of ascaris do not develop in urine. If they are left standing for a considerable time in urine, they all die. Urine kept in a warm room kills the eggs more rapidly. They think that the killing of the eggs greatly depends on the penetrability of the liquid in which the eggs are kept. Their experiments proved that liquor formaldehydi and sulphuric acid do not affect the exterior coating of albumin, but they coagulate the egg white that surrounds the embryo, and, therefore, they do not penetrate deep enough to reach the embryo. When the eggs are kept in a solution of glacial acetic acid and nitric acid for a long time, the albuminous membrane decays and the chitinous wall is exposed, but the embryos within the eggs develop, for these drugs will not penetrate through the chitinous membrane. Hydrochloric acid also brings about a similar result. Phenol, on the contrary, seems to kill the eggs in a shorter time.

Efficacy of Epinephrin in Treatment of Night Sweats.—According to Takaki epinephrin has an absolute value in the prevention of night sweats in tuberculous cases. Its efficacy lasts for three days. Individual hypersensitiveness may be prevented by administering it in 10 c.c. of physiologic sodium chlorid solution. If after the first injection no improvement should occur, the same quantity may be given for the second time after an interval of one day. By the third injection and in increased doses, the ultimate result is often obtained. The author gave 0.7 c.c. but thinks much larger doses may be given. Diabetes, myocarditis and pulmonary hemorrhage are contraindications.

Sept. 7, 1919, No. 299

*Experimental Investigation on Mixed Immunization. Amagishi.
*Influence of Sugar in Infection of Pathogenic Microorganisms. Takemura.
Microscopic Findings on Neurorecidive in Eye after Injection of Arsphenamin. S. Suganuma.

Experimental Investigation on Mixed Immunization.—Amagishi carried out an experimental investigation on immunization with the trivaccine consisting of *Bacillus typhosus* and *B. paratyphosus* A and B. Injection of either the nonmixed or the mixed vaccine produced equal result, as has been reported by other investigators. There seemed hardly any difference between the quantity of the antigen and the strength of its reaction test.

Influence of Sugar in Infection of Pathogenic Micro-Organisms.—Considering the fact that the diabetic is liable to tuberculous affection, Takemura carried out experiments on animals. He made rabbits suffer from experimental diabetes and then they were inoculated with tubercle bacilli. By injecting the bovine type of the tubercle bacilli into the vein of the experimental diabetic rabbits, tuberculous infection developed more easily than in the controls. Tuberculous affection of the thoracic cavity developed more easily in the experimental diabetic rabbit than in the normal rabbit, when the bovine type of tubercle bacilli was injected into the thoracic cavity. Tubercle bacilli injected either into a vein or into the thoracic cavity, found their way into the lungs more easily in the experimental diabetic rabbit than in the normal. The phagocytic power of the leukocytes in the serous fluid of the thoracic cavity was found remarkably lower in the experimental diabetes animals than in the normal. The same lowering of the phagocytic power of the leukocytes in the serous fluid of the abdominal cavity of the experimental diabetic rabbit has been proved. Sugar in the culture medium proved noninfluential against tubercle bacilli. It neither hindered nor accellerated their growth.

Journal of State Medicine, London

September, 1919, **27**, No. 9

Royal Institute of Public Health: Past, Present and Future. Leverhulme.—p. 258.
Work of Ministry of Health. W. Smith.—p. 262.
Local Administration of Work of Ministry of Health. F. E. Fremantle.—p. 268.
Maternity and Child Welfare: Protection of Motherhood. F. H. Champneys.—p. 271.
Tuberculosis Communities. N. D. Bardswell.—p. 279.

Journal of Tropical Medicine and Hygiene, London

Sept. 1, 1919, **22**, No. 17

*"Boomerang" Leg. J. B. Cleland.—p. 165.
*Helminthic Ova in Human Stools. P. W. O'Connor.—p. 166.

"Boomerang" Leg.—Cleland gives references on boomerang leg or curvature of the tibia and makes a brief extract from Stirling's original description of this condition as published in the *Inter-Colonial Quarterly Journal of Medicine and Surgery* **1**:221, 1894-1895.

Helminthic Ova in Human Stools.—Two thousand and eighty-two white soldiers were examined by O'Connor; fourteen harbored intestinal parasites. Of ninety-nine Indian native troops, fourteen men had parasites; 403 of the 667 Egyptian native soldiers who were ill had parasites and 812 of 1,006 healthy Egyptian native soldiers had parasites. The most common parasites were the ankylostoma and *Ascaris lumbricoides*.

Medical Journal of Australia, Sydney

Aug. 23, 1919, **2**, No. 8

*Removal of a Missile from Pericardium; Treatment of Tunnels In Bone. R. S. Skirving.—p. 145.
Dysentery In Palestine Campaign. C. B. Blackburn.—p. 148.
Work at A Casualty Clearing Station, With Reference to New Methods. A. S. D. Barton.—p. 150.

Removal of a Missile from Pericardium.—Skirving removed a piece of shrapnel casing from the posterior surface of the heart where it had become embedded in adhesions. It had been lodged there for four months. Skirving exposed the heart through an incision extending from the center of the sternum at the level of the sixth costal cartilage along that structure outward and downward to its union with the rib. Ether and oxygen in varying proportions was administered through a tracheal tube connected with the usual apparatus for tracheal insufflation (Meltzer's method).

Aug. 30, 1919, **2**, No. 9

*Pneumonic Influenza. A. Lewers.—p. 167.
*Pneumonic Influenza. L. Gullett.—p. 170.
Arsenical Keratosis. L. P. Johnston.—p. 173.

Sept. 6, 1919, **2**, No. 10

Two Hundred Cases of Subtotal Hysterectomy. T. Murphy.—p. 187.
Education and Care of Blind. S. J. Cantor.—p. 191.
An Enterocystoma with Twisted Pedicle. J. A. G. Hamilton.—p. 195.
Case of Stenosis of Aorta. G. R. West.—p. 195.

Influenza and Public Health Administration.—Lewers claims that the recent pandemic of influenza is practically the first in history which has challenged the powers of a fairly universally established public health administration. He says that we should not be afraid as a profession to recognize and to confess that some of our most cherished hopes and beliefs in public health administration have been very badly shaken by this pandemic influenza, and we should not in any spirit of injured pride or stiff necked obstinacy attempt to bolster up or perpetuate official measures of control which have been proved all over the world to be futile. We ought not to shirk the fact that different infections demand methods of official supervision and that it is impossible to handle epidemic influenza in the same way as epidemic smallpox.

Heart and Influenzal Pneumonia.—Gullett is convinced that one of the after-effects of influenza will be some weakness of the heart. What the effect on the lungs will be in those patients who have recovered from the pneumonic type, remains to be seen.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

April, 1919, **8**, No. 4

*Interstitial Pregnancy. R. Vaudescal.—p. 177.
*Abdominal Cesarean Section. E. Essen-Möller.—p. 221.
*The Stillborn during the War. V. Chambrelent.—p. 230.

Interstitial Pregnancy.—Vaudescal reports a case in which the interstitial pregnancy had continued for more than four months without serious accidents from rupture. The fetus had become encysted while the placenta remained in the primitive cavity of the implantation of the ovum, and it had continued its development. In this and in a second case the uterus was removed, but in a third case merely a wedge-shaped resection was made at an emergency laparotomy done for hemorrhage. These cases show that an interstitial pregnancy develops like any extra-uterine pregnancy up to and including the rupture. The possibility of this anomaly should be suggested by the Ruge-Simon sign, asymmetry of the adnexa, and the lateral insertion of the round ligament in relation to the tumor. If the tumor pivots more towards the Douglas pouch, the probabilities are more in favor of a tubal pregnancy. With the tumor farther forward, the course of the case will decide between the interstitial or the angle site. With the latter the pregnancy becomes a uterine pregnancy but the other proceeds to rupture. Nothing was found in all this research to indicate formation of decidua at any point. The forty-three page article concludes with considerable bibliography.

Cesarean Section.—Essen-Möller presents 106 cases of cesarean section at the Lund maternity as a basis on which he discusses certain obstetric problems, especially the question whether we should save the child in this way even when we know that the risk for the mother will be enhanced thereby. He is confident that the improvement in the results of cesarean section in recent years has been so great that we need not hesitate to resort to it at need. In the 10 cases of cesarean section done for eclampsia, three of the women died, but in these fatal cases he had temporized so long that the intoxication was intense. His experience in these eclampsia cases has converted him to the view that vaginal cesarean section is preferable in these cases unless the narrowness of the vagina forbids. In 7 sections for placenta praevia one of the women died, probably from embolism. Fatal embolism has been known even after version alone, in these cases. He does not approve of cesarean section for placenta praevia except when hemorrhage is profuse, the cervix is not dilated enough for version and the mother is certainly not infected. In one case he did cesarean section knowing that the child was dead. There was very little hemorrhage during the operation, certainly much less than if he had waited for spontaneous dilatation of the cervix.

He makes a point of removing the uterus after the child has been extracted when the operation is done for myoma. His final conclusion is that abdominal cesarean section should be preferred to version or perforation when certain that the woman is free from infection. With the slightest suspicion of infection, he attempts version or forceps extraction to avoid perforation of the living child. If conditions preclude a living child later or if there are absolute indications for it, he does cesarean section by the Porro technic. All the women recovered in his eight cases of this kind. The important point is to estimate when to operate. He does not approve of prophylactic interventions nor of waiting until the woman is in danger of infection. In all discussions of cesarean section he says that the outcome for the children should be recorded as well as for the women. Only one child's life was sacrificed, and this, from hemorrhage of the umbilicus, might have been avoided. All of the other 106 infants were safely delivered except the seven that were dead beforehand and one that succumbed to the effect of malformations. The mortality was 5.6 per cent. among the 106 women.

Stillbirths in France.—Chambrelent's statistics show that there was no increase in the average of stillbirths in France during the war.

Paris Médical

Sept. 6, 1919, **9**, No. 36

Ophthalmology in 1919. F. Terrien.—p. 173.
*Ocular Localizations and Complications of Polymorphous Erythema. A. Terson.—p. 178.
*The Fourth Symptom in the Hutchinson Triad. A. Cantonnet.—p. 182.
Otorhinolaryngology and Surgery of the Face and Neck in 1919. L. Dufourmentel.—p. 184.
Peculiarities of Deafness in Musicians. A. Castex.—p. 192.
The Minor Signs of So-Called Latent Foreign Bodies in the Esophagus. Guisez.—p. 196.
Capdepont's Malformation of the Teeth. P. Fargin-Fayolle.—p. 200.

The Ocular Manifestations of Polymorphous Erythema.—Terson remarks in concluding this study of polymorphous erythema, that almost all affections of the eyes have a number of factors, even in the specific cases. General causes and occasional causes cooperate to induce the morbid condition. In certain cases of iritis and choroiditis no treatment seems effectual until the teeth are put in order, or the liver is treated, or the diseased urethra or uterus. Sometimes a vigorous purge will be followed by the complete subsidence of a conjunctivitis that has been showing but slight improvement under local measures. Dianoux has reported the powerful adjuvant effect, actually curative, of acetylsalicylic acid in a typical syphilitic iritis. He cites Manlio's case of a woman of 51 who had eleven attacks of nodose erythema and in two of them, about the fourth day, subacute glaucoma developed, requiring an emergency iridectomy and cured by this. Terson regards acute glaucoma as an identical process with acute edema of the lung. It induces hypertony because the means for excretion and exosmosis are so scanty. General pathology thus explains and identifies glaucoma. Le Couëdic has reported a case in which glaucoma alternated with arthritis, and once there was an attack of acute edema of the lung.

The Fourth Symptom with the Hutchinson Triad.—Cantonnet regards chronic hydrarthrosis of the large joints, especially of the knees, as so common with Hutchinson's teeth, keratitis and deafness in inherited syphilis that it deserves to be included with them in the characteristic triad. The joint and corneal lesions all yield to mercury as a rule.

Presse Médicale, Paris

Aug. 28, 1919, **27**, No. 48

The Pulmonary Sequelae in the Gassed. A. Clerc, L. Ramond and H. Guilhaume.—p. 477.
Necessity for Meat in the Diet to Aid Recuperation from Jaundice. P. Chevalier.—p. 478.
Colon Bacillus Pyosalpinx and Pelviperitonitis during Pregnancy. Patel and Dujol.—p. 479.
*Perforating Tuberculous Process in the Skull. H. Roger.—p. 481.
Regional Anesthesia for Operations on the Stomach. A. Kotzareff.—p. 482.

Tuberculosis of the Skull.—Roger remarks that recent publications show that perforating tuberculous lesions of the skull are not so rare as generally assumed; 13 cases have been published by five French writers since Pelletier's com-

pilation of 206 cases in 1910. About 75 per cent. of the cases develop before the age of 20, and there are almost invariably other tuberculous lesions elsewhere. The lesion causes few symptoms, merely a dull ache roused by pressure and not worse at night. In the case illustrated, the opening in the frontal bone was a necropsy surprise. If the condition otherwise permits, extensive resection into sound tissue is the most certain means to ward off recurrence.

Sept. 8, 1919, **27**, No. 50

*Early Treatment of Acute Osteomyelitis. P. Vignard.—p. 501.
*Comparison of Expansion of the Two Sides of the Chest. L. Binet.—p. 502.
*Cultivation and Isolation of Anaerobes. M. Rhein.—p. 504.

Early Treatment of Acute Osteomyelitis.—Vignard expatiates on the difficulty of diagnosing and locating osteomyelitis in certain cases. He says that he has had several cases which proved fatal within two days although the general condition had not warned of profound intoxication. Wavering between the fear of aggravating conditions by an early operation and the fear of the process spreading and inducing septicemia or locating in an undesirable region, he finally compromised by making a fixation abscess, and he here reports seven cases in which a prompt cure followed the production of a turpentine aseptic abscess. In one case he temporized too long and the fixation abscess came too late. In less than a month later he had another almost identical case, the upper end of the femur swollen, painful and red, and the general condition so bad that an operation seemed inadvisable. Even after the fixation abscess 3 cm. in diameter had been induced, the fever kept high for two days but then conditions promptly righted themselves and the cure was soon complete. In another case the boy of 14 had fever and delirium after complaining of pains in his legs. The temperature had kept at 40 C. for three days. Then puncture of the hip joint released 3 or 4 c.c. of a turbid fluid, but the fever kept high and persisted for a day or two after the turpentine abscess had been induced, but then the temperature began to go down and the cure was soon complete. He now induces a turpentine abscess as a routine measure in all cases of osteomyelitis.

Measuring Expansion of Each Side of the Chest.—Binet gives an illustration of a device for photographically recording the expansion of each side of the chest separately.

Cultivation and Isolation of Anaerobes.—Rhein's method is merely cultivating, along with the anaerobes, *Bacterium faecale-alcaligenes*. On account of the absence of ferments in the cultures of the latter, the saccharolytic and proteolytic power of the anaerobes shows up very distinctly, and their characteristic odor is unmistakable. As the former is not toxic for animals, test inoculation with the combined cultures is practicable and instructive. To obtain pure cultures of the anaerobes, all that is necessary is to heat the combined culture for ten minutes at 56 C. This kills off the faecale. The latter can be used in the same way as a symbiote with the botulinus. The anaerobes seem to proliferate as perfectly in combination with the symbiote as alone. Rhein generally uses pancreatic peptonated bouillon, and it does not have to be boiled before inoculating it with the germs. He gives a number of minor points, and a modification of Marino's method for isolating anaerobes, and he emphasizes the facility and reliability of this symbiotic culture technic which does not require any special apparatus and can be applied to almost all anaerobes.

Progrès Médical, Paris

Aug. 9, 1919, **34**, No. 32

*Fibrous Transformation of Chronic Bursitis. J. P. Tourneux and A. Ginesty.—p. 311.
*Tuberculosis in Children. L. Ribadeau-Dumas.—p. 312.
Spa Treatment of Bone Disease. L. D'Arbois de Jubainville and P. Mathieu.—p. 317.

Fibrous Transformation of Hygroma.—In the three cases described the tumor had been first noticed two or three months before, and it was readily shelled out. There seemed to be two factors involved, liquefaction of the adipose elements and hyperplasia of the connective tissue.

Pulmonary Tuberculosis in Children.—Ribadeau-Dumas has never been able to learn much that was conclusive from physical examination of infants and young children suspected of tuberculosis, but roentgen examination clears up the diagnosis. Tuberculids are also significant, but they may be difficult to discover. Phlyctenas on the conjunctiva are instructive, and tubercle bacilli are often found in minute cutaneous or subcutaneous abscesses which seem an ordinary pyodermatitis. He says that the best hope in treatment seems to be with tuberculin, especially with extremely minute doses given by the intradermal technic.

Aug. 16, 1919, **34**, No. 33

Significance of Pneumococci in the Blood in Influenza. Roussel and de Lavergne.—p. 321.
*Psychomotor Instability in Schoolchildren. G. Paul-Boncour.—p. 322.
Spa Treatment of Disease of Upper Air Passages. P. Bourgeois.—p. 325.
*Ether in Treatment of Pertussis. Audrain.—p. 329.

Psychomotor Instability in Schoolchildren.—Paul-Boncour explains psychomotor instability in children as the continuation of what Simon calls cerebral irritability and Comby calls cerebral excitation. It may be traceable to some slight brain lesion. The child constantly changes his ideas and attitude. Nothing really interests him, and nothing can hold his attention for more than a brief period. The tendency can and often does disappear in time under vigorous treatment, hydrotherapy, special gymnastic exercises, rest between classes, and sedatives; sometimes specific treatment may be required. On account of the motor weakness, training for a trade is difficult unless muscles and hands are given special training to strengthen them. Puberty generally comes late in these children. If the medical inspector recognizes early this psychomotor instability, much can be done for the children.

Ether Treatment of Whooping Cough.—Audrain asserts that whooping cough can be rapidly cured by three or four intramuscular injections of ether at 66 degrees, given every second day. The dose is 1 c.c. up to the age of 10 months, and then 2 c.c. The series of four injections is rarely necessary, two or at most three usually suffice.

Revue Mens. de Gynécologie et d'Obstétrique, Paris

June, 1919, **14**, No. 6

*Influenza in the Pregnant. J. Andérodias.—p. 201.
Hernia of Ovary Into Vagina. E. Rouffart.—p. 213.
Amniotic Hydrorrhea; Expulsion of Fetus 108 Days After Rupture of Membranes. A. Weymeersch.—p. 214.
*The Sponge in Gynecologic Surgery. C. Pellanda.—p. 217.

Influenza in the Pregnant.—Andérodias states that in 37.9 per cent. of his 29 cases of influenza in pregnant women the pregnancy was interrupted. This is almost exactly the proportion noted in the records of the 1889-1892 epidemic of influenza. The abortion or premature delivery did not mitigate the disease; labor even seemed to whip it up. No tendency to hemorrhage was observed, and 61 per cent. of the children were viable. The death rate among the 29 women was 34 per cent.

The Sea Sponge in Gynecologic Surgery.—Pellanda emphasizes the advantages of the sponge which becomes distended as it soaks up fluids; gauze loses its elasticity under the same circumstances. He regards it as almost indispensable for arresting profuse venous or capillary hemorrhage such as sometimes occurs after a difficult Wertheim operation. It is useful further in draining after colpotomy for pus in the pelvis. Used in hundreds of cases in Pollosson's service for these indications, there have never been any by-effects from it, and he lauds the absolute harmlessness and efficacy of the sea sponge for these conditions.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Aug. 21, 1919, **49**, No. 33-34

Influenza. G. Sobernheim.—p. 1225.
Elliot's Glaucoma Operation. C. A. Hegner.—p. 1244.
Colloid Carcinoma of Appendix Causing Volvulus of the Small Intestine in Man of Sixty-One. J. Dubs.—p. 1251.

Schweizer Archiv. f. Neurol. und Psychiatrie, Zurich

1919, **4**, No. 2

*Localization of Stereognosis. R. Bing and L. Schwartz.—p. 187.
Embryology of Corpus Callosum. J. M. de Villaverde.—p. 199. Conc'n.
*Biology and Psychiatry. C. v. Monakow.—p. 235. Conc'n.
*Further Light on the Plantar Reflex. H. Bersot.—p. 277.
Erethistic Oligophrenia. P. Sarasin.—p. 324. Cont'n.
*Schizophrenia and the Choroid Plexus. C. v. Monakow and S. Kitabayashi.—p. 363.

Localization of Stereognosis.—Bing and Schwartz affirm that the diagnosis of a cortical lesion is justified whenever the subject is unable to recognize objects by the touch, his sensory and perceptive powers otherwise unimpaired. The cortical lesion may be diffuse in which case there is loss of secondary tactile identification, but usually it is a symptom from a focal lesion. They have generally found this focal lesion at the middle third of the parietal ascending convolution and the parietal lobe on the opposite side from the astereognostic hand. In a case described with illustrations, the astereognosis of the left hand was so pronounced that, with the eyes closed, the man was unable to tell a coin from a pencil, a watch from a box of matches. Other symptoms also suggested a tumor in the brain; they had come on suddenly and by the tenth day left hemiparesis developed. The consent to the proposed operation was deferred and the young man died the seventeenth day after the initial symptoms. Necropsy confirmed the diagnosis, an abscess being found at the point specified above while the parietal lobe was nearly and the supramarginal gyri completely intact to all intents and purposes. The findings confirmed Head's statements based on study of war wounds of the cortex. Forty-three articles on various aspects of touch paralysis are listed in conclusion.

Biology and Psychiatry.—Von Monakow's extensive article is an attempt to bring psychiatry out of its place apart—according to the general acceptance of psychiatry at present—and have it take its proper place among the other departments of medicine. He seeks to demonstrate the logical physiologic connection between the brain and the psychic and nervous symptoms. This would simplify medical thinking, and if it can be corroborated by physiologic facts—which he thinks is fairly well established to a certain extent even now—the physician will be protected against many erroneous and lay interpretations of so-called nervous conditions, and the way will be smoothed for the diagnosis and rational treatment. He declares that under the influence of toxic action not only the mechanical innervation but the emotions and instincts can be completely transformed. The toxins responsible for this may come from without or may be generated in the body. Morphologic changes, alone or combined with disturbance in the internal secretions, may entail an embryologic retrogression, a retrograde generation of psychic functions which may lead to actual loss of functional continuity between the various centers or neurons of the cerebral mechanism. He reiterates that along with the biophysical Abbau of function we must recognize a biochemical Abbau. This latter may be irregular and migratory. The effect is a retrograde generation, a dropping back into earlier phases of psychic development, even back to infancy. But this dropping back does not affect all the elements of the mind in the same measure, and this results in great incongruities. The dropping back may be only temporary or it may be permanent. The reaction, he asserts, is always a defensive reaction. The psychosis in all its forms is merely this defensive reaction, plus possibly compensatory effects. It always represents the self-defense of the individual against the injurious influences acting on the central nervous system. These primary and secondary reaction conditions thus all conform to biologic-psychologic laws. He claims that these views provide for the first time a foundation on which can be built a bridge between the brain, the organ of the psyche, and the symptoms of mental impairment. This biologic-physiologic mode of thought, keeping in constant touch with physiology and anatomy, will open new fields for research, especially on the choroid plexus, cerebrospinal fluid and biochemistry in general as factors in psychoses. He has been impressed with the frequency of severe structural disturbance of the choroid plexus at necropsy of the insane.

The Plantar Reflex.—Bersot's title is "Variabilité et corrélations organiques. Nouvelle étude du reflex plantaire." The different reflex reactions seem to follow the variations in the total capacity for reflex action. The toe and the contralateral reflexes are peculiar in that, while following these variations, they amplify them. Bersot insists that the plantar reflex in itself has not much significance, but it becomes really and objectively important when we record its frequency and the variations of this frequency.

Schizophrenia and the Choroid Plexus.—As mentioned in the abstract above, von Monakow has been impressed with the frequency of severe structural changes in the choroid plexus in the insane. In twelve cases of severe chronic schizophrenia, of different types, the choroid plexus was never found even approximating normal. In some of these cases the choroid plexus showed actual necrosis. It was most pronounced in the case of a physician with paranoid hallucinations but not much mental derangement, who committed suicide. Photomicrographs from this case show the amyloid degeneration of the connective tissue, scattered degeneration of the fringelike structure, accumulation of colloidal masses, and interpapillary exudation. Merely senile changes in the choroid plexus differ entirely from those found with schizophrenia.

Amazonas Medico, Manáos

April-June, 1919, **2**, No. 6

*The Clinical Forms of Ulcerating Granuloma. A. da Matta.—p. 73.
The Ruoss Test for Sugar in Urine. A. da Matta.—p. 83.

Ulcerating Granuloma.—Da Matta describes with illustrations a typical case of ulcerating granuloma of the pudenda in the female. He classifies the various forms of granulomatosis as that affecting the skin (benign), the skin and mucosa (dubious), and cavities. In the latter the prognosis is always grave.

Anales de la Facultad de Medicina, Lima

May-June, 1919, **2**, No. 9

*The Nervous Complications of Typhus. E. Odriozola.—p. 143.
Prevention of Infanticide. L. Avendaño.—p. 152.
Normal and Pathologic Language. L. D. Espejo.—p. 169. Cont'n.
*Mycosis in Rats. E. Escomel.—p. 190.
*Acute Fatal Dilatation of the Stomach. F. Quesada.—p. 193.
Mental Disease in Early History of Peru. H. Valdizan.—p. 198. Cont'n.
Alleged Endemic Occurrence of Yellow Fever on Peruvian Coast. J. Arce.—p. 219. Cont'n. See abstract, page 945.

Nervous Complications of Typhus.—Odriozola reviews recent literature on this subject, and describes a case in which during convalescence hemiplegia became installed, with certain spastic phenomena and aphasia. The paralysis subsided somewhat, but a tendency to athetosis and the persistence of the aphasia denote actual degeneration. The urea content of the blood was high—1.80 gm.—but there were no appreciable disturbances from this. It seems as if urea in the blood does not have an unfavorable prognosis outside of chronic nephritis, according to his experience.

Mycosis in Rat.—Escomel gives an illustrated description of a mycosis affecting the head and inducing extensive destructive lesions in rats. In his two specimens there did not seem to be much toxic action as the animals were agile and not emaciated, although the eyes and scalp had been destroyed. The special fungus involved was the malassezia of the hyphomycetes group.

Acute Fatal Dilatation of the Stomach.—Quesada reports the case of a man of 40 convalescing from dysentery at a health resort, who complained of sudden, intense pain in the stomach. It was not relieved much by household measures, and he was taken to the hospital but died on the way, only a few hours after the first symptoms. Necropsy revealed extreme dilatation of the stomach with the duodenum occluded by pressure from the mesenteric vessels, plus the mechanical and toxic action of the liquor which the man had been drinking. Quesada remarks that the action of some

toxin always opens the scene in these cases, but that the dilatation is promoted by the unconscious swallowing of air. Even with extreme dilatation of the stomach, no immediate harm results until the duodenum gets compressed by mesenteric vessels stretched taut by the abnormal conditions. Although the outlet of the stomach and duodenum thus becomes closed, there is no hindrance to the swallowing of air. There is even suction of air into the esophagus by a kind of valve action from the diaphragm excursions which are amplified by the nervous distress. The case described confirmed all these assumptions.

Anales de la Facultad de Medicina, Montevideo

May-June, 1919, **4**, No. 5-6

*Blastomycosis in America. E. Escomel.—p. 281.
*Ligation of Hypogastric Artery. J. Pou Orfila.—p. 336.
The Physiologic Criterion. S. C. Rossi.—p. 358.
*Research in Biology. J. Maria Estapé.—p. 391.
*Simplified Apparatus for Transfusion of Blood. J. D. Parietti.—p. 413.

Blastomycosis in America.—Escomel relates that cases of blastomycosis in man have been published in Argentina, Brazil, Peru and Bolivia and that probably some cases classed as leishmaniasis probably belong in this category. When the fungus has once invaded the mucosa, it is liable to persist throughout life. There is no contagion from it in places where it is not endemic, as it seems to require the intermediation of some biting insect. There has been no effectual treatment until recently, but tartar emetic by the vein and mouth, plus heliotherapy, seem to have awakened hopes of conquering the disease in the near future. He describes its geographical distribution, always to date in tropical forest regions, the characteristic salivation, and the crossed ridges on the palate. In three cases described the benefit from the above treatment amply confirmed the diagnosis.

Ligation of Hypogastric Artery.—Pou Orfila has ligated the hypogastric artery in three cases which he describes with illustrations, and commends the technic he followed. The ligation was done for an arteriovenous aneurysm of the hypogastric artery and vein in one woman of 32 and to arrest hemorrhage after colpotomy in a younger woman with grave postabortus infection and recurring hemorrhages. A pus pocket in the pelvis had required the colpotomy. In the third case the intraperitoneal ligation of the hypogastric artery had been done for secondary hemorrhages from spontaneous obstetric rupture of the uterus and bladder. This route is preferable for the obese. By taking advantage of the cleavage, it is easy to reach the hypogastric artery through an incision in the flank. This technic is particularly useful when there are infectious processes in the pelvic cellular tissue. For the intraperitoneal route, a transverse incision above the symphysis is advisable. Ligation of this artery should be always considered in treatment of rupture of the uterus with threatening hemorrhage. Unilateral enlargement of the buttocks and pudenda is an important sign of aneurysm of the hypogastric artery. Thrill in the vaginal culdesac may be due to other local causes. He advises ligating with catgut in case of hemorrhage, and with silk for an aneurysm.

Law of Specific Energy.—Estapé refers to the law of the specific energy of sensory nerves which Müller enounced in 1840. Estapé argues that this law applies to all living matter, in all its manifestations, biologic, sociologic and psychologic. Müller's law aids us to define sensation as the transmission to the consciousness of a quality or state of the sensory nerve determined by some external cause in the different sensory nerves.

Transfusion of Blood.—The method of transfusion to which Parietti calls attention is done by means of a single tube which aspirates the blood from the donor and passes it on and into the vein of the recipient. The blood thus flows in an almost continuous stream, protected from the air, directly from one vein into the other. The suction is done by a small standard with two adjustable rollers between which passes the tube. By adjusting the rollers tight and pushing the frame back on the tube, which the rollers squeeze flat, a vacuum is induced which aspirates the blood from the vein. A tube from a jar of 4 per cent. solution of sodium citrate enters the tube near the recipient's end, and the blood is thus citrated as it passes into the second needle. The article is illustrated.

Annaes Paulistas de Med. e Cir., S. Paulo

May, 1919, **10**, No. 5

*Tuberculosis in Children in S. Paulo. C. Ferreira.—p. 97.
*Serotherapy of Toxemia of Pregnancy. A. Vieira Marcondes.—p. 101.
*Silent Gastric Ulcer. Z. do Amaral.—p. 105.
Friedreich's Disease. A. de Almeida Prado.—p. 108.

Tuberculosis in Children in S. Paulo.—Ferreira relates that tuberculosis has never been particularly prevalent at S. Paulo, and of late has been reduced still more, until recently it has been only 1.2 and 1.1. per thousand of the general mortality. Most of the cases are in the old part of town. In fourteen years up to 1916 there had been 186 deaths recorded from pulmonary, and eighty-three from abdominal tuberculosis in children under 10, and forty-three of tuberculous meningitis, a total of 350 deaths from tuberculosis, but it is probable that tuberculosis contributed to the death rate from pneumonia, measles, etc. During the last few years a vigorous campaign has been waged against tuberculosis, especially in children, and welfare work of different kinds is bearing good fruit, S. Paulo ranking high in defensive hygiene, public and private.

Serotherapy of Toxemia of Pregnancy.—Vieira has been experimenting with a liver-suprarenal extract in treatment of toxemia of pregnancy but found this unsatisfactory as it was blind work, not knowing which glands were at fault. More recently he has been using the serum from gravid goats. This induced urticaria in some cases, and actual serum sickness in one woman, consequently this method of serotherapy was modified. The proteins were extracted from this goat serum, but the other elements were left unmolested, and the serum was evaporated to one fifth, so that a single dose represented only 1 c.c. Clinical experiences with this perfected technic showed that the therapeutic effects were the same as with the whole serum, while it had none of the by-effects of the latter. With one or two injections, uncontrollable vomiting and eclampsia subsided promptly in some cases reported, and the effect was favorable also in pregnancy sciatica, neuralgia, jaundice, headache, and gastro-intestinal disturbances. With the aid of this *soro hormo gravidica*, as he calls it, there is no need to interrupt the pregnancy. It is made under Vital Brazil's direction at the Instituto Sôrotherapico Butantan, the state institute for serotherapy.

Perforation of Silent Gastric Ulcer.—Do Amaral reports the sudden perforation of an unsuspected gastric ulcer in a young man. The intense pain was located in the appendix region, and the rigidity of the abdominal wall was most pronounced here. There was no history of stomach or duodenal symptoms, and the incision the eleventh hour was made for the supposed appendicitis. A gush of fluid escaped, but the appendix was exonerated. Then a supra-umbilical median incision revealed the perforation in the stomach. In two other more recent cases, twenty-four hours had elapsed before the operation and both of the patients died.

Brazil-Medico, Rio de Janeiro

July 19, 1919, **33**, No. 29

Syphilis and its Prophylaxis in the Brazilian Navy. J. Porto Carrero.—p. 225.

July 26, 1919, **33**, No. 30

Hemorrhagic Purpura; Two Cases. Cardoso Fonte.—p. 233.

Medicina Ibera, Madrid

July 19, 1919, **8**, No. 89

*Exceptionally Grave Case of Paralysis Agitans. E. Fernández Sanz.—p. 33.
Chaulmoogra Oil in Leprosy. J. Sanz de Grado.—p. 35.
Imperfectly Treated Syphilis. Sicilia.—p. 37.

Exceptionally Severe Case of Paralysis Agitans.—In Fernández' case the woman of 79 presented continuous and intense tremor of the entire body, including the jaw and tongue. The tremor of the tongue had irritated it until it had

swollen and hung pendent from the mouth, incessantly shaken by the intense tremor. The tremor was complicated by absolute rigidity of the whole body, as if it were one solid piece, and extreme difficulty in breathing and in swallowing completed the clinical picture. Tracheotomy is being considered.

July 26, 1919, **8**, No. 90

*The Functional Capacity of the Heart. García Triviño.—p. 53.
*Arsenical Treatment of Inherited Syphilis in Infants. Díaz Villarejo.—p. 54.
Spinal Anesthesia in Surgery. C. Calderón.—p. 57.

The Functional Capacity of the Heart.—García applied different tests to twenty persons to determine the functional capacity of the heart, including Lian's method, Mendelsohn's and Mackenzie's, with Vaquez' differential pressure, the difference between the maximal and minimal tension, and the oculocardiac reflex. By comparing the findings with several of these tests we can generally obtain good oversight of conditions in the heart as a whole. His findings harmonized with the course of the cases, while the findings were unreliable with the Abrahams, Hertz and Gräupner tests.

Treatment of Early Inherited Syphilis.—Díaz has found mercury alone too slow in its action to depend on for young infants with severe manifestations of inherited syphilis. Combined with arsenic, as for adults, it will prove effectual in the majority of cases, but with involvement of the stomach or bowel, etc., mercury should not be given at all. These children are liable to have large numbers of the spirochetes in their viscera, and if the arsenic is given by the vein or muscle in too large doses at first, the massive destruction of the germs liberates such qualities of endotoxins that the child may succumb to this shock. Injection of neo-arsphenamin into the subcutaneous cellular tissue allows gradual and perfect assimilation of the drug, and its very slow elimination. He injects 1 cg. dissolved in 5 c.c. of serum per kilogram of body weight, making the injection in the shoulder, and waits two weeks during which the syphilitic lesions show improvement and the weight increases. The injection is then repeated twice at fifteen day intervals, possibly increasing by 1 cg. the last time. Then mercurial inunctions are begun and alternated with neo-arsphenamin. When the infant shows only mild manifestations of the syphilis, he begins with mercurial inunctions, and then adds the neo-arsphenamin in the same way.

Prensa Médica Argentina, Buenos Aires

June 10, 1919, **6**, No. 1

*Membranous Pericolitis from Tardy Inherited Syphilis. M. R. Castex and Delfor del Valle.—p. 1. Cont'n.
*Celiac Crises from Sclerosis of the Pancreas. C. Bonorino Udaondo and J. E. Carulla.—p. 9.
*Gastro-Intestinal Disease from Tardy Inherited Syphilis. M. R. Castex and N. D. Rosso.—p. 10. Cont'n.
Discrepancies between the Axillary and Rectal Temperatures in Certain Cases of Appendicitis. R. A. Marotta.—p. 15.
The Biologic Basis of Tuberculin Treatment. P. M. Barlaro.—p. 16.
Ergograph for Testing Results of Motor Plastic Operations. G. Bosch Arana.—p. 18.
The Arrhythmias. P. M. Barlaro.—p. 19. Cont'n.
The Rôle of Syphilis in Banti's Disease. L. L. Resio.—p. 21.—Conc'n.
Early Diagnosis of Gastric and Duodenal Ulcers. H. García Lagos.—p. 22.

Chronic Abdominal Disease from Tardy Inherited Syphilis. The main points of these articles were summarized recently on page 1169. Fourteen large roentgenograms accompany the case histories in these instalments.

Painful Attacks from Sclerosis of the Pancreas.—Bonorino and Carulla report a case in which paroxysms of agonizing pain, connected with the meals at first but later continuous and persisting, were the only appreciable symptoms, except for gastric achylia. There was no glycosuria and no tender points could be found. Functional tests of the pancreas failed to reveal insufficiency, but there was progressive weakness. No relief was obtained from any measures, including treatment as for syphilis. An exploratory laparotomy showed the stomach and duodenum normal. There were no pathologic antecedents except an obliterating arteritis with gangrene nine years before, compelling low amputation of the leg. The man died five days after the laparotomy, and necropsy revealed sclerosis of the head of the pancreas although the rest of the organ seemed normal. The pains must have been the result of compression of some portion of the solar plexus, actual celiac crises.

July 10, 1919, **6**, No. 4

Hydatid Cyst in Both Lungs. Alfredo Buzzi.—p. 41.
Reimplantation of Teeth. F. E. Judsón.—p. 42.
*Provisions for the Insane in Argentina. D. Cabred.—p. 44.

Modern Treatment of the Insane.—Cabred tells of the fine results accomplished at the Colonia Nacional for the insane in Argentina, located at Luján. He emphasizes the advantages of the open door and occupation system of treatment, its superior efficacy with 30 per cent. cured or improved, and the lesser expense for construction and maintenance. The income realized from products of the colony amounts to quite a sum while the gain in the general health and spirits is great, as also the economy in service, materials, etc. He gives figures showing that the credit side of the account shows a balance from 1901 to the end of 1918 of 2,769,652.87 pesos.

July 20, 1919, **6**, No. 5

*Endless Dilatation of Stenosis of the Esophagus. R. Pini and R. Becco.—p. 49.
*Diathermy in Gonorrheal Orchi-Epididymitis. C. H. Niseggi and A. Astraldi.—p. 52.
Fatal Hemorrhage from Supposedly Cured Nasal Miasis. P. M. Barlaro.—p. 54.
Subacute Nephritis with Retention of Chlorids. Id.—p. 54.

Endless Dilatation of Stenosis of Esophagus.—Pini and Becco give an illustrated description of their case of cicatricial stenosis of the esophagus in a young man, from taking by mistake a tablespoonful of sulphuric acid kept for cleansing his hands. He took olive oil and tepid water at once and vomited several times, and also took a dose of calcined magnesia. There was repeated hematemesis, and the stenosis of the esophagus compelled an operation the third day as only fluid could be swallowed. With esophagoscopy, a sound was worked down into the stomach and drawn out through a gastrostomy opening and a stout silk thread attached to it. Rubber tubing fastened on the endless thread was found the most convenient means for enlarging the contracted lumen. The sharp edges of the tubes were smoothed off and the tube once in the stenosis was left in it for twenty-five or fifty minutes. The length of the piece of tubing is not specified, but the picture shows it as long as the distance from eyebrow to chin, and also shows how it was introduced at the corner of the mouth, the head thrown back. Other means of treating cicatricial stenosis are discussed, with considerable bibliography.

Diathermy for Gonorrheal Orchi-Epididymitis.—Niseggi and Astraldi expatiate on the advantages of this treatment which they regard as the most rapid, most energetic, harmless and painless method of treating this frequent complication of gonorrhea. They report ten cases from their experience with twenty-three. This technic is now the routine treatment at the Hospital Nacional de Clínicas.

Revista Clínica, Medellín, Colombia

June, 1919, **2**, No. 13

*Exophthalmic Goiter in Colombia. J. B. Montoya y Flórez.—p. 1.
Quinin. G. Toro Villa.—p. 20.
*Tachycardia. A. Castro.—p. 32.
Gastrojejunostomy. L. Restrepo I.—p. 40; Id. R. Villegas Arango.—p. 45.

Exophthalmic Goiter in Colombia.—Montoya comments on the rarity of this disease in his province, Antioquia, and reports in detail a case in a man and one in a young woman. The latter has improved considerably without any special medication, the pulse now being 100 instead of 130, and the patient is able to attend to household duties, but there is still emotional instability. Only one case has been published before in the province, and Montoya knows of only eleven cases in sixteen years. Seven were in well-to-do young women and two died. The result was mediocre in the few operative cases, as a rule, but in one woman of 44 the thyroidectomy was promptly followed by subsidence of all the symptoms except the exophthalmos which has been only slightly improved.

Tachycardia.—Castro's patient is a man of 26 whose extreme tachycardia is not influenced by change of position, time of day or exercise. Only the tachycardia of exophthalmic goiter presents these features, and the man seems excitable and loquacious but otherwise presents no symptoms.

Revista Española de Medicina y Cirugía, Barcelona

July, 1919, **2**, No. 13

*Mitral Stenosis. A. Aguilar Feliu.—p. 359.
*The Tonus of the Myocardium. M. and D. Bañuelos Garcia.—p. 362.
Improved Technic for Staining the Tubercle Bacillus. Raquel Grau. —p. 365.
The Medulla Oblongata. J. Vilató.—p. 367. Conc'n.
Tubercle Bacilli in Sputum in Early Diagnosis of Tuberculosis. Remigio Dargallo.—p. 377.

Mitral Stenosis.—Aguilar interprets the case he reports as an instance of mitral stenosis secondary to a tuberculous process in the lung. The tuberculous process had spread to involve the pulmonary veins, the aorta and pericardium.

Tonus of the Myocardium.—The Bañuelos present evidence that the myocardium possesses a tonus like that in other muscles of the skeleton.

August, 1919, **2**, No. 14

*The Prognosis and Treatment of Diabetes. S. Carro.—p. 417.
Anomalies of the Tibia, etc. F. Margarit.—p. 424.
*Comparison of Intubation and Tracheotomy. Martinez Vargas.—p. 427.
Vaccination against Typhoid and Paratyphoid. Remigio Dargallo. —p. 433.

Prognosis and Treatment of Diabetes.—Carro insists that minute and continued study of the case is necessary before it is possible to institute proper treatment and draw the prognosis. The latter depends mostly on the multiple complications to which the diabetic is liable. It is important to discover whether there is other coexisting disease that may modify the course of the diabetes. When all this has been ascertained, Labbé's test diet should be enforced for three days and then the third day the whole of the twenty-four hours' urine should be collected and tested for sugar, uric acid, chlorids, phosphates, purin bases, total nitrogen, urea and the azouric coefficient. The urine may be apparently normal except for retention of chlorids, and although the sugar may have disappeared yet the case may present an unfavorable prognosis on this account. When there is an arthritic diathesis or tendency to eczema, dyspepsia or nephritis, the dietetic treatment has to be materially different in each, as he describes in detail. By watching over the course of the case we can detect aggravation of certain symptoms or the appearance of new, and by modifying the diet to correspond may steer the patient past the danger point. On the whole he regards the pancreatic type as the gravest of the four forms of diabetes. The prognosis is also bad in the nervous or hypophysis type, generally of endocrine origin. A cure is usually realized in the type connected with acute infections, but less frequently with chronic infection or alcoholism. Diabetes in pregnancy generally subsides afterward.

Parallel Between Intubation and Tracheotomy.—Martinez cites authorities from the first century of our era who described diphtheria, but then and for long after it was regarded as a purely local affection. The first to describe it completely as a general intoxication from a local affection were Spanish writers of the sixteenth century. No symptom has been added since to their complete description "De morbis puerorum." Tracheotomy is as old as diphtheria itself, even Hippocrates referring to both. Martinez continues, "Intubation was suggested in antiquity, and Bouchut of Paris in 1858 presented a tube for the purpose, but it was criticized so severely that intubation was not adopted until O'Dwyer of North America took it up—the fate of many initiatives in the Latin races, their initiative coming to flower and fruition in other countries which get the credit for the whole." Sota of Seville was the first to use the new method in Europe. All became enthusiastic over it when diphtheria antitoxin was discovered, but even now Martinez prefers tracheotomy when the child cannot be kept under constant surveillance with skilled hands to replace the tube if it is coughed out. He always goes prepared for both intubation and tracheotomy. In three cases he found coexistent thymitis which rendered intubation impossible. In one case a retropharyngeal abscess had the same effect, and in some others edema of the larynx. The edema of the larynx in one case had closed the opening of the tube in the throat and grasped the tube so firmly that the tube could not be removed. The emergency tracheotomy and artificial respiration resuscitated the apparently moribund infant. The tube was thus in the larynx and the cannula in the tracheotomy opening for four days, but no harm resulted. Tracheotomy is indicated further when there is excessive production of tough membranes, and when there is preexisting subglottic laryngitis or bronchitis. In one case with pneumonia, forty hours after the tracheotomy the child had apparently fatal suffocation, but Martinez dilated the trachea and with forceps he extracted plugs of mucosa. Then he introduced into the trachea and bronchi a lubricated soft rubber tube, drawing it up and down, and thus extracting large quantities of mucus, starting up the respiration anew, and the moribund child was brought back to life. He has applied this technic in a number of other cases, and reported in 1900 his success with this sweeping out the tracheobronchial passages. He deems this useful for combating accumulation of mucus, and paralysis of the bronchi, and for inciting to cough and respiratory movements, whether there is diphtheria present or not. In nine cases the tracheotomy was done in extremis. Even when the opening had been made, no air entered the lungs as the thorax was in a paralyzed condition, but he pounded twice on the abdomen, inserted the cannula, and started artificial respiration, with stimulating injections of caffein, camphorated oil and ether, and in a few minutes the child was resuscitated.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Aug. 23, 1919, **2**, No. 8

*Pathogenesis of Primary Hypertension. D. Klinkert.—p. 554.

Pathogenesis of Primary Hypertension.—Klinkert tabulates the arterial pressure findings, with the urea content of the blood serum, and the Ambard coefficient as recorded in twenty-five persons with an arterial pressure above normal. They had all applied for treatment on account of incipient angina pectoris, shortness of breath, or other symptoms from abnormally high blood pressure, but they did not present any symptoms calling attention to the kidneys which were presumably sound. But the ureosecretory coefficient determined by Ambard's formula told an entirely different story. The Ambard index was much above normal in all but two of the twenty-five, the figure ranging from 0.101 to 0.300, in comparison to the normal figure of 0.06 or 0.08. Fourteen of the twenty-five also had a urea content of 500 mg. He lists and discusses the various theories in vogue as to the kidney being responsible for the high blood pressure or vice versa, pointing to the tabulated findings in his cases as apparently settling the question.

Hospitalstidende, Copenhagen

July 30, 1919, **62**, No. 31

Improved Technic for Staining Granules, Especially in Sections of the Blood-Producing Organs. V. Ellermann.—p. 897.

August 6, 1919, **62**, No. 32

*Ileus in the Pregnant and in the Parturient. P. V. Tuxen.—p. 921.

Ileus in the Pregnant and in Parturients.—Tuxen has been able to find on record only 106 cases of ileus in pregnant and parturient women, but he has encountered three cases himself. In one, torsion of an ovarian tumor had compressed the bowel, inducing mechanical ileus. In his second case, four and a half hours after the woman of 41 had been safely delivered of her fourteenth child, she suddenly developed symptoms of ileus, and a ruptured dermoid cyst was found. The contents of the small cyst had set up irritation, with dynamic ileus as the result. In the third case the bowel had become incarcerated from pressure of the gravid uterus at the sixth month. Diligent search failed to reveal any other cause for the ileus. The uterus expelled its contents a few days later.